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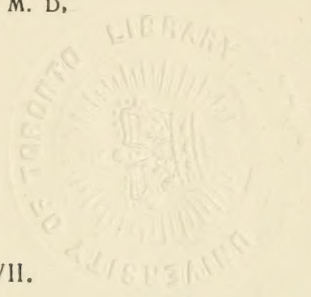
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## ORIGINAL COMMUNICATIONS.

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### CAN THE FREQUENCY OF SOME OBSTETRICAL OPERATIONS BE DIMINISHED?\*

BY

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ON February 15, 1897, over twenty years ago, I began my connection with the Sloane Hospital for Women, then the Sloane Maternity Hospital. At that time women had no advice during their pregnancies, little skill in the management of their labors, and practically no care during their puerperium.

Some of the medical students saw a few cases delivered during their medical-school days, while all were totally unfit to practice obstetrics after their graduation. Of course, there were a few competent physicians to deliver women, but the rank and file were an ignorant lot, while such a man as a surgical obstetrician did not exist. The development of such men was in progress but along lines quite different from the modern ideas of to-day.

The instrument relied upon then to terminate dystocia was the forceps. Another operation frequently employed to help one out of a difficulty was a version. Physicians had to be skilful at both of these operations for a successful outcome, because in the hands of bunglers a tremendous amount of harm could be done.

Before 1897 a Cesarean section had been attempted but once in the history of the Hospital since its foundation in 1888, and that resulted in failure. High forceps operations, versions, and

\* Read at a meeting of the Society of the Alumni of the Sloane Hospital for Women, October 26, 1917.



craniotomies, however, were frequent, while the complications of pregnancy, such as the various toxemias and eclampsia, abnormal presentations, difficult and prolonged labors, were of daily occurrence.

To-day there is a great change manifest. The forceps, though still our sheet anchor in most of the delayed cases, has been supplanted in the very difficult ones by the knife. Cesarean section is now an ordinary recognized procedure with definite indications. The obstetrician must be a skilled surgeon, prepared for any major abdominal work. He is often called upon to remove a fibroid, an ovarian or a dermoid cyst, complications of pregnancy and labor, but more than all he must be able to deal with a ruptured uterus, removing that organ if necessary.

To-day a high forceps is dreaded and a version avoided, because the outcome of both these operations is so uncertain. Craniotomies are only done as a last resort, while the complications of pregnancy, such as eclampsia, are now much rarer.

What are the reasons for all this progress?

(1) Women appreciate that pregnancy and labor are often far from physiological processes and seek advice early.

(2) Medical students and practitioners, even midwives, are better trained and know more frequently what to do in an emergency. They also know when they have reached the limit of their knowledge and resources and when to call in skilled assistance.

(3) More women are delivered in hospitals, where every weapon is at hand to combat any expected or unexpected complication.

(4) More physicians specialize in obstetrics.

However, with all our advances, there is still too much indifference, ignorance and bungling work among the rank and file of the medical profession who practise obstetrics. Even specialists in this branch are guilty of too many mistakes and errors in judgment.

Can anything be done during pregnancy to prevent complications? Can anything be done during pregnancy and during labor to render the delivery of a patient less difficult and dangerous?

Certainly—preventive obstetrics is the first aim of any man doing this work. There is no doubt that with proper care during pregnancy and with proper care during labor many of the dangerous complications and many of the difficult and uncertain obstetrical operations can be avoided.

The greatest advance has been in the prevention and management of the toxemias of pregnancy. As the climax of this dreadful complication is eclampsia and, as eclampsia demands many major operations in delivery, so one can easily see that if this terrible



symptom can be prevented the number of such major operations can be lessened.

How can eclampsia be prevented? By a careful diet; by a continued stimulation of all the organs of excretion—the bowels, the skin, the liver, the kidneys—not forgetting some of the ductless glands, especially the thyroid—and remembering that this toxemia is a complex condition; by finding out at once the cause of symptoms such as persistent nausea and vomiting, headaches, specks before the eyes, dimness of vision, restlessness, nervousness, sleeplessness, or any edema; by noting any rise in blood pressure; and finally by regular, frequent, and thorough examinations of the urine. This examination should be made early in pregnancy, every three weeks until the sixth month, every two weeks thereafter until the ninth month, and then every week. The urine should be examined for albumin, sugar, acetone, diacetic acid, indican, urea, and in certain cases a nitrogen partition should be made. Traces of albumin should never be overlooked. If once the faintest trace is found one should make a daily examination.

The physician should be responsible and should see that the specimen be in on time. I am often surprised by the carelessness in this respect even of some of our well-known specialists. A friend of mine stopped in to see me the other day because of daily vomiting attacks. I had already sent her to one of our best obstetricians. On questioning her I found that he had not asked for her urine and she was then over six months' pregnant!

It is not unusual to hear of a woman dying of eclampsia in the hands of a good practitioner—even a specialist in obstetrics. Their complaint has been that the patient was slack in sending in her specimens. This, I believe, is a poor excuse. It is the obstetrician's business to attend to this matter, for if the urine has not been sent in on schedule he can always get it after writing a letter or, more quickly, after a reminder by telephone. Of course, fulminating cases of eclampsia will develop without any one's fault, but most of them have the premonitory symptoms mentioned. This means that mild symptoms of any kind should not be disregarded, and if symptoms increase in severity notwithstanding treatment the uterus should be emptied long before the patient's condition becomes alarming. Following out, then, this line of treatment, the greatest toxic symptom of pregnancy—a convulsion, with its high mortality (both fetal and maternal)—will rarely occur.

In these twenty years, among my own private cases I have had only one antepartum case of eclampsia. This patient lived in

the Bronx. Her specimen was several days overdue and I could not obtain it. She also disregarded the grave symptoms of splitting headache, repeated vomiting, and edema. I was notified only after she had had two convulsions. I had her removed to a sanitarium, and although the baby was lost through prematurity I managed to pull her through by stimulating her elimination and by as prompt an evacuation of the uterus as possible.

At the Sloane Hospital in the past years the number of eclampsia cases have diminished. From January 1, 1901, to December 31, 1905, inclusive, we had 113 cases of eclampsia in 7145 deliveries, or 1.5 per cent. From January 1, 1911, to December 31, 1915, we had seventy-four cases in 9224 deliveries, 0.8 per cent. These statistics show, I think, that more patients consult their physicians early in pregnancy, and that the patients as a whole get better care during their pregnancies than formerly.

Can abnormal presentations be corrected by external manipulations, thereby preventing difficult deliveries? Often with ease.

How much trouble can be avoided by changing a transverse position to vertex? This can be done in the last month of pregnancy. To make the position permanent a properly applied abdominal binder is necessary. Also, many breech cases can be turned even within a day or so of labor. In my first 200 cases (1900-1902) I delivered ten breech cases, while in my last 200 cases I delivered only six of this presentation (1916 to date, Apr. 1, 1917).

This procedure of changing a breech presentation is sometimes impossible, however, in a primipara where the legs are extended—a frank breech. A scant amount of liquor amnii also makes the operation difficult.

Not long ago, one of our well-known New York physicians had a young primipara, as a patient. He did not discover that the child was presenting by the breech until a few days before term. Not relishing the idea of delivering the woman with this complication he immediately asked me to do the work for him. The next day I went down to see her and, under chloroform, corrected the abnormality. A few days later the patient delivered herself easily after about four hours of pain. I have probably turned 75 per cent. of my breech cases in this way.

Another possibility—of changing a brow or a face case to a vertex early in labor—is often forgotten. How much trouble can be avoided by such a procedure is appreciated only when one tries to deliver a brow or a mentoposterior position as such.

The same problem, in a way, presents itself in an occipitoposte-

rior position which promises to remain persistent. Before the head becomes wedged in this unfavorable position, a manual rotation anteriorly can be accomplished frequently, after which the head may be born spontaneously or at most delivered by an easy forceps.

Should the father and the mother be allowed to boast of unusually large children? I have not delivered a 10-pound baby in private practice for some years. In other words, does a large child with a large, hard head—overgrown and oversize—cause dystocia? At the hospital and in consultation outside I have had almost as much trouble—high forceps and craniotomies—with such cases as in cases where there has been a real pelvic deformity. It has not been unusual for a patient to be admitted to the Sloane Hospital more or less *in extremis* after failure of repeated attempts to deliver her of her seventh, eighth, or even twelfth child by forceps. This dystocia was due to too large children. I remember being called to such a case down on the lower West Side where all the physician in attendance had accomplished was to pull off the baby's head.

Can, then, the size of the baby be limited before its birth? I believe so. After the sixth month the amount of carbohydrates in the woman's diet should be cut down. This I advise as a regular rule. Some patients will obey and others will not. I try to persuade them that a 6- or 7-pound baby is born most easily and does best after it gets into the world.

The following two cases show what diet can do in this respect:

CASE I.—Mrs. R., first came to me in 1910, a thirty-two-year-old primipara. She was a short, stocky Jewess with a pelvis of a masculine type. The external measurements were good—26 cm., 28 cm., 23 cm., 23 cm., 22 cm.—but the cavity of the pelvis was funnel-shaped, narrowed somewhat at the outlet. Her menstruation occurred irregularly at intervals of three to seven months. With no early nausea, she did not suspect that she was pregnant until she felt life and noticed some abdominal enlargement. I delivered her in her first labor after sixteen hours of hard pains by a moderately difficult medium forceps. The baby, a girl, was moderately asphyxiated, but was resuscitated and did well. It weighed 7 pounds. The head was well moulded, showing a tight fit. She did not conceive again until three years later. She came to see me January 31, 1914. Although her last period was July 29th, six months past, the uterus was only about four months in size. Consequently I estimated her date of confinement roughly for June 15th. It was hard to get her to call to see me. May 10th the baby's size seemed to be normal. She did not call again until June 6th. In the meantime the child had grown considerably. The head was lying R. O. A., dipping into the brim. Fearing trouble, I ordered castor oil, oz. i, and quinine, gr. x, that night at eleven o'clock. Pains began soon



after the dose at 1.30 A. M.; 3.30 A. M. they were very strong and at 4.45 A. M. bearing down and very frequent. At 6.10 A. M. she was begging for relief. The head was R. O. A. at midpelvis. Forceps were applied and the head was delivered without difficulty at 6.41 A. M. The shoulders, however, refused to budge. It was impossible to deliver them in the ordinary way. Finally, after thirty minutes or more with the patient bearing down, with an assistant pressing on the fundus, while I was pulling for all I was worth, the shoulders entered the pelvis and were born. The baby's heart beat slowly for twenty minutes and it took a few gasps. It was a girl—weighing 9 pounds 15 ounces—very fat and broad through the shoulders.

The patient came to see me again for her third confinement, on September 20, 1915—seven months nearly in size. I suggested a Cesarean section but the operation was refused. I immediately put her on a proteid diet, almost to starvation, and advised her to walk two to four miles daily. I did not advise induction of labor as the cervix was long, high and closed, and the baby seemed smaller. Nov. 15th was her approximate date, and at 11.00 P. M. I ordered oil and quinine again. November 16th, the next day, at 9.00 A. M. the pains started but were weak until 2.45 P. M. At 3.15 P. M. they were strong and bearing down—a baby weighing 6 pounds 11 ounces was born spontaneously at 4.47 P. M. He did finely. This child was over 3 pounds less than the one which died. Last July I delivered this patient again three days ahead of the estimated date of her confinement, without difficulty, of a baby weighing 7 pounds 6 ounces. This labor was started by a dose of castor oil and quinine.

CASE II.—Mrs. D., a second gravida, twenty-four years old. The patient had lost her first child, weighing 9 pounds, after a difficult high forceps by another doctor. She came to me February 2, 1915, six months pregnant. Her pelvic measurements were 23 cm., 26 cm., 22 cm., 22 cm., 20 cm.—another pelvis of the masculine type. She was put on a proteid diet. She was also advised to wear a tight corset and to take long walks later on in her pregnancy.

October 25th, two weeks ahead of time, as the head was riding high, as the baby seemed large for her and, as the cervix had dilated somewhat, I decided to induce labor, so at 9.15 P. M. I inserted a No. 2 modified Champetier deRibes' balloon. The pains began irregularly during the night but were not strong until 12.30 P. M. At 2.15 P. M. the membranes ruptured. At 3.10 P. M. a boy, 5 pounds, 11 ounces, strong and husky, was born, weighing over 3 pounds less than her first baby. It did well. Of course, in this case the size of the baby was reduced also by shortening the pregnancy by two weeks.

There are two other measures which may make labor more easy:

1. Long walks during pregnancy. The idle and pampered hate to walk with a motor at their command. These patients lead a hot-house life. No wonder that their babies grow large, and ride high above the pelvic brim! No wonder their muscles are flabby and



when labor comes on inertia and fatigue result. With exercise, red blood, good muscular tone and endurance for the supreme test of labor, all contribute toward a more easy and successful outcome.

2. A snug-fitting corset worn during pregnancy. This support should be comfortable. By its use not only is the patient's appearance more presentable, but also being properly applied it drives the head into the brim more early in pregnancy. In this way, molding of the head is accomplished long before labor begins. What happens without this support, especially in short-waisted women? The woman looks enormous, the belly is pendulous, the head is pulled away from the axis of the brim, and often abnormal presentations result. I remember a case at the Hospital where forceps could not be applied to the head by the physician outside because of a pendulous belly in a woman weighing between 250 and 300 pounds. It looked ridiculous to see an assistant sitting on the fundus to get the head in the axis of the brim while I applied forceps from below. However, by this procedure the head was easily grasped and delivered.

All these measures should be adopted in ordinary cases with normal pelves. How much more so should we take advantage of them where the pelvis is contracted. Fortunately, small pelves are not very common in general practice. When they do occur the problem which confronts us is to estimate the relation between the child's head and the pelvis. This is far from easy. Mistakes are often made by the best obstetricians. The external measurements do not give us the whole situation. The thickness of the bones, the prominence of the sacral promontory, the axis of the plane of the inlet to the axis of the force exerted, the shape and amount of room in the pelvic cavity, the width of the pelvic outlet, the mobility of the coccyx on the sacrum, must be considered. Whether there is room enough in a given pelvis for the passage of a child is often a matter of judgment of the individual operator. There are some methods by which this is arrived at, but his long experience is of great value. Also the presentation of the child, the position of the head, its flexion, its hardness, where it lies in relation to the pelvic canal, are important points for a decision. Besides, the consistency of the cervix and the possible strength of the uterine contractions are factors of the utmost significance. To solve, then, what must be done in a given case is most difficult.

When the baby is very large, riding high above the pelvic brim, or where the pelvis is very small, the problem is simple, for one can decide on a Cesarean at once. In other cases, an induction of labor, never earlier than two weeks before term, in suitable cases

gives very satisfactory results. These are our only elective operations. The others employed are of necessity with uncertain results.

If we wait for a test of labor in a doubtful border-line case, nature often helps us out by a spontaneous delivery or by advancing the head far enough so that we can do a successful forceps operation.

Lack of progress in labor with the head high above the pelvic brim in the presence of a disproportion may make us decide for an abdominal delivery. However, we must not be too radical and recommend a Cesarean section just because the head is high, because then we will often open the abdomen unnecessarily. Late cases in which there have been many examinations and much manipulation increase many times the risk of Cesarean section, and often having once committed ourselves to the vaginal route the abdominal section may be contraindicated on account of its high maternal morbidity and mortality from sepsis.

Many articles have been written showing the powerful action of pituitrin in labor. To-day we are not so enthusiastic over this drug and have narrowed its indications to simple inertia without obstruction. There are, then, four cardinal conditions to remember before employing pituitrin: 1. The cervix must be completely dilated and effaced. 2. The membranes must be ruptured. 3. The presentation must be normal. 4. There must be a proper relation between the fetal head and the maternal pelvis throughout. Given in such cases, the drug can be used without risk, is a powerful adjuvant to labor, and will often obviate the necessity of an instrumental delivery, which is the aim of all obstetricians.

The furor about Twilight Sleep has almost died out. The notoriety of this method of allaying pain in labor, however, has brought forth the demand generally among the laity for something to control the suffering necessary for the birth of a child. Gas alone, or gas with oxygen, has been used for a year or so with varied results. This anesthesia can be used earlier in labor, in the first stage even, or at any time when the patient wants relief. Although gas is far from being a perfect anesthetic, some of the patients are greatly benefited by its use. In some, the strength of the uterine contractions is increased, while in others the relief from pain gives the patient the necessary courage to strain and to bear down during the second stage—so much so that often we are spared the necessity of applying the forceps to terminate labor. I can mention only two drawbacks to gas inhalation besides the nuisance of a prolonged administration, from which the obstetrician only suffers.

1. There is often great difficulty in controlling the advance of the

head over the perineum. This rapid advance will require a change to chloroform or ether. 2. There is an increased tendency to postpartum hemorrhage. I have had much more worry since the use of gas in this respect and have had to pack more uteri.

Nothing pleases me more in my obstetrical work than to have a baby born a week or two ahead of time, especially in a primipara, because it means usually a quick, simple labor. Any baby weighing 6 to 7 pounds is plenty large enough, and getting into the world easily, in my experience it does better than a larger child dragged out by a difficult forceps operation. Consequently it is not unusual for me to try to "shake the apple off the tree" ahead of time by castor oil and quinine. It is remarkable how often this dosage is effectual. Occasionally, as mentioned before, when the disproportion between the baby and the pelvis is slight but when one scents trouble, I start labor ahead of time or at term by means of a modified Champetier deRibes balloon.

In multipara, who have had a previous difficult labor, or who have lost a baby in a previous confinement, without marked pelvic contraction, it is my custom to insert a bag one to two weeks before term with almost invariably good results. Last year I induced twenty-four cases in this way without any fetal or maternal mortality. All patients, however, cannot be managed in this way. The cervical condition must be favorable. If the cervix is rigid and if there is present a possible uterine inertia, the whole process is slow and painful, the outcome is uncertain, and there is more risk of infection.

I have compiled some statistics to show the recent changes in obstetrical procedures:

1. In the Sloane Hospital for Women, from 1901 to 1905 inclusive, there were 7145 cases. During this period labor was induced for various indications 284 times or 3.9 per cent. From 1911 to 1915 inclusive there were 9224 cases. Labor was induced 302 times or 3.3 per cent. During the first period there were 558 low forceps operations or 7 per cent. During the second period, 380 low forceps operations or 4 per cent. Medium forceps operations increased; 176 to 449, or 2 per cent. to 4.5 per cent. High forceps operations, 81 to 138, an increase from 2 per cent. to 4.5 per cent. This is surprising.

Versions diminished, 299 or 4 per cent. to 272 or 3 per cent. There has not been an elective version done in the hospital for the last three years and possibly longer.

Craniotomies have diminished, 33 or 0.3 per cent. to 18 or 0.2 per cent.

The last symphysiotomy was done in 1902; the last pubiotomy in 1908.

From 1901 to 1905, 38 Cesarean sections were done, or 0.53 per cent. From 1911 to 1915 there were 133 cases, 67 primary, 70 secondary, or 1.65 per cent. Last year 32 Cesarean operations were performed. The greatest number for one week was 4, and for one day 3 such operations.

Humpstone reports 148 abdominal hysterotomies in 6493 deliveries at the Methodist Episcopal and Jewish Hospitals of Brooklyn, or 2.3 per cent.

2. From private practice. In my first 200 cases, I induced labor 29 times, or 14.5 per cent., losing no mothers and only one child at birth. This fetus was born dead in a case of threatened eclampsia after basiotripsy. It was very premature and nonviable. Two babies, both premature, subsequently died—one in a case of accidental hemorrhage, and the other, a second twin.

*Indications.*—Contracted pelvis, 12; chronic endocarditis, 2; prolonged gestation, 7; (six had lost their previous babies at birth); accidental hemorrhage, 1; toxemia and threatened eclampsia, 2; previous difficult labors or stillbirths, 5. Total, 29.

*Terminations.*—Seventeen cases terminated spontaneously; 4 cases terminated by high forceps; 5 cases terminated by medium forceps; 2 cases terminated by low forceps; 1 case terminated by basiotripsy on a nonviable infant in threatened eclampsia.

In my last 200 cases, I have induced labor 41 times, or 20.5 per cent. for various indications—contracted pelvis, large babies, prolonged gestation, previous stillbirths or difficult births, toxemia of pregnancy and threatened eclampsia, and accidental hemorrhage. There was one fetal death—a nonviable child in a case of accidental hemorrhage.

In my first 200 cases I delivered 10 breech cases as such, and in my last 200 cases only 6.

In my first 200 cases I did 29 low forceps, without fetal or maternal mortality, to 15 in my last 200 cases, with no fetal death. I regret to say that in the latter series a mother died suddenly without warning from a pulmonary embolus on the 15th day while sitting up in a chair.

In my first 200 cases I did 24 medium forceps, losing one child, born with the cord twice about the neck. One child died later—atelectatic. In my last 200 cases I did only 8 medium forceps. All the children did well.

In my first 200 cases I did 15 high forceps—one baby was stillborn



and one died later. Both were lost after prolonged labor and hard traction. The mothers all recovered. In my last 200 cases I did only 4 high forceps. All the mothers recovered. One baby lived ten hours and then died in convulsions. To-day patients do not expect to lose their babies, and when such an unfortunate event happens friends immediately ask who was the obstetrician and why did he not do something else, for instance a Cesarean section.

I will present the problem of this case to the Society because we sometimes learn more from our failures than from our successes.

Mrs. B., a primipara, thirty-six years old. Dr. McCosh removed her appendix in 1906. Dr. Phinney took out gall-stones and broke up adhesions about the colon in 1910. Since then she has suffered from abdominal pain, gas and constipation. "Having tried many physicians without much relief," she had been in the hands of an osteopath for two or three years.

During her pregnancy she had more or less abdominal pain and discomfort, would not take laxatives, and said she could not walk. The pelvic measurements were normal—24 cm., 28 cm., 22 cm., 22 cm., 20 cm. Until the last part of her eighth month, the child was lying as a breech, when I turned it to a vertex. After this the head remained L. O. A., but high until labor began. Four or five days before term, oil and quinine were given to start labor without success. When five days overdue pains began during the night but were infrequent. These pains continued all day but were only at half-hour intervals. At 10.00 P. M. the pains were stronger, every five minutes. As she was very tired, I ordered chloral and codeine, and she dozed between the pains. 9.00 A. M. the next morning the cervix admitted two fingers only and was still very firm. I believed that the cervix had held the head up as it had been long. The baby did not seem especially large so I decided to insert a No. 3 bag. The pains soon became strong. The bag came through at 2.00 P. M. The cervix then admitted five fingers. At 2.30 P. M. the membranes ruptured and the head settled somewhat into the brim. The pains were then frequent and less strong but the patient stood them badly as she was very tired. At 4.45 P. M. gas was started as she demanded some relief. The pains continued off and on with little if any advance. At 8.30 P. M. the patient was completely tired out and exhausted. I knew that the delivery through the natural passages would be difficult and the outcome, so far as the child was concerned, would be uncertain, but was afraid to recommend and perform a Cesarean section—the other alternative—knowing the high maternal mortality in these late cases, especially as a mother had been lost from sepsis two or three weeks previously under similar conditions at the hospital.

After conferring with the husband, I decided not to take the risk of the abdominal operation but to do a high forceps instead. After dilating manually the cervix as far as possible, I applied

the blades. Hard tractions were necessary to complete the dilatation of the cervix, mold the head, and deliver it. The baby's heart remained good throughout. The operation consumed one hour and fifteen minutes. The baby, weighing 8 pounds 5 ounces, was badly marked and deeply asphyxiated. In addition, the cord had been tight about the neck. After an hour's work of resuscitation, it breathed fairly well. Eight hours later it began to have convulsions, and after two hours more died, probably from cerebral hemorrhage. No autopsy was allowed. The cervix was somewhat torn. The mother did well, without temperature, for fourteen days and then developed a mild popliteal phlebitis.

I believe that if this patient had had good pains and a less rigid cervix the result would have been otherwise. I made a mistake in underestimating the size of the child. By abdominal examination it did not seem over 7 pounds. The head was hard and difficult to mold. These two facts added to my troubles. I believe that the patient can have a second child through the natural passages without much difficulty—an elective Cesarean section, however, must be considered.

In my first 200 cases, I performed four versions, losing one child—a transverse presentation with a prolapsed cord, seen late in labor in consultation.

In my last 200 cases, I have done only three partial podalic versions, *i.e.*, pulling down a foot in a frank breech. In my first 200 cases, I performed two craniotomies. These were cases seen in consultation where attempts to deliver by forceps before my arrival had failed and the children were already dead. I have done no such operation in my last 200 cases.

In my first 200 cases, I did two accouchement forcé operations—one for placenta previa and one for eclampsia (the latter a consultation case). I have not done one such operation in my last 200 cases.

In my first 200 cases, I did not perform a single Cesarean section. In my last 200 cases, I did three—all were successful. In one I had done a previous Cesarean for a large child in a woman with a just minor pelvis. Another had had a previous Cesarean in Morristown, N. J., after a prolonged labor and had nearly died from puerperal sepsis.

The indication for the third case was unusual.

Mrs. N. came to me in 1910 when thirty-eight years old for her first baby. The fetus died without apparent reason at about four months' gestation. I emptied the uterus between the fifth and

sixth month. Examination of the fetus and placenta, as well as a Wassermann test, proved negative.

She conceived soon again, went to term, and was delivered August 10, 1911, of a fine healthy boy, weighing 7 pounds 5 ounces, after a rather difficult high forceps. The child was asphyxiated but reacted. To-day he is a wonderful specimen in every way.

She conceived again in seven months, went between four and five months, when I emptied her uterus of a fibrous ovum, only two and one-half months in size. This occurred May 17, 1912. After the operation the patient began to be more or less depressed, still wishing for another child.

She conceived again after a two years' interval. The fetus grew nicely till the eighth month and then died without apparent cause. May 13, 1915, a macerated fetus was born.

After this disappointment her mental condition became quite alarming at times.

By accident during the following summer, she conceived again for the fifth time, when forty-four years old. During this pregnancy her management was about the same. Notwithstanding the negative Wassermann previously she had some iodide, which she could not tolerate. During this pregnancy she had a little protiodide which she could not take for more than a few days at a time.

The child grew nicely and the fetal heart remained strong until May 3, 1916, when the beat seemed more distant and muffled. In view of the patient's past history, I considered that now was the time to act. She was within three weeks of term, the child was large, and it must be born alive to restore the mother's mental balance. To anticipate antepartum fetal death, I decided upon a Cesarean. A consultant and the family physician agreed with this decision and on May 5th the operation was done. A baby weighing 8 pounds and 5 ounces was extracted. The mother did finely. The baby, however, was jaundiced and languid and even on breast milk gained very slowly. After a bad summer he is now doing well, nine months old.

*In Conclusion.*—I have endeavored to show how many uncertain obstetrical operations can be avoided by ordinary measures during pregnancy and labor.

The statistics show that forceps operations, especially high forceps, are diminishing in frequency, that elective versions, symphysiotomies and pubiotomies are more or less obsolete, and that craniotomies are only performed as a last resort on dead, injured, or nonviable babies.

Finally, these statistics show that induction of labor and Cesarean sections are very frequently done nowadays, and are sane and safe operations under recognized indications. A warning, however, must be proclaimed against the radicalism of many obstetricians who perform the abdominal operation too often as an easy way out of any obstetrical difficulty.

## URETEROVESICAL ANASTOMOSIS.\*

BY

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As intimated by the title of this paper, the subject of ureteral anastomosis can be considered only when the junction of the ureter is to be made to the bladder. As the time given me for the presentation of my subject is limited, no attempt will be made to take up even that in exhaustive detail.

This operation is called for by ureteral obstructions and strictures, injuries of the ureter, sometimes during labor, but more often as a result of operation, and where a deliberate resection of the ureter is planned in the removal of a bladder growth or where the extension of a growth from another organ makes it wise to remove a portion of the ureter.

In the female, strictures of the ureter are rather common, Hunner having reported fifty. Most of his cases had the obstruction in the upper end of the ureter; in my experience, the proportion of upper to lower strictures has been about three to two. Without going into the etiology or the methods of diagnosis of such strictures, I would suggest that the following type of case is suitable for this operation.

Tuberculosis is a cause of ureteral obstruction and it is essential that this be ruled out as it contraindicates this operation. There are many ureteral strictures that can be dilated, but in which the stricture re-forms in a very short time. These, in the absence of contraindications, soon to be considered, are I believe, suitable cases for operation. The same applies to strictures that cannot be dilated. A moderate degree of infection and kidney insufficiency is not a contraindication, but an indication for operation. However, should the infection be severe and the kidney function markedly damaged, nephrectomy is preferable in the presence of a good kidney on the other side; for in such a case as this, it is worse than useless to drain so badly damaged a kidney, as the

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continued discharge of pus will prolong the already existing bladder infection, to say nothing of the increased operative risk.

Bilateral obstruction is an indication rather than a contraindication for operation, for with obstruction of both ureters it is only a matter of time before they are irretrievably destroyed. In fact I believe that the bilateral condition is a wider indication for this operation than where the trouble exists on only one side.

In doing this operation for stricture, one must consider that the same cause may eventually affect the other ureter. I have had such an experience.

I believe that in the future many more of these cases will be operated upon. If these strictures cannot be kept dilated and are not operated upon, the back pressure will cause pressure atrophy, and the poor drainage will favor infection, with the eventual destruction of the kidney. I have been criticised for such radical views, but the critics have not come forward with any helpful suggestions. They claim that after such an operation, contraction of the newly formed ureteral meatus, occurs, with back pressure, dilatation of the ureter and the renal pelvis, and infection of the kidney. These claims are directly contrary to the experience of the Mayo Clinic, from which Judd has reported cases, in which all the evidence points to the fact that after such an operation a kidney can and does perform its function normally for an indefinite time. Later I hope to report in detail my own experience. One case that I did three years ago, now has less ureteral and pelvic dilatation than at the time of operation, the urine is free of infection and the function of this side equals that of the other as proved by the indigo-carmin elimination. A patient operated upon in March of this year shows a diminution of pelvic dilatation from 10 c.c. to 30 c.c., with less pus than at the time of operation; she is relieved from the attacks of renal colic from which she suffered.

The greatest scope for this operation is in ureters injured during operation, where a portion of the ureter has to be resected in the course of another operation, and for the injuries of childbirth. The injury to the ureter during operation may be recognized at the time, a few days after operation, or not until many days, usually from seven to twenty, have elapsed, and a fistula, either ureterovaginal or ureteroabdominal, has developed. Usually the tying of one ureter during operation is not recognized early, the tying of both is suspected if after a complicated operation there is no excretion of urine.

If the injury is detected at the time it is inflicted, the anastomosis should be made immediately if conditions permit. If it is detected



shortly after operation and is on only one side, a consideration of the patient's general condition will have to be taken into account before subjecting the woman to another operation. If the injury is to both ureters, and this injury is a ligation, then the patient must be operated upon, if catheters cannot be passed. This operation may be done simply to release the ligatures, or if there is evidence that the vitality of the ureter has been so injured that a fistula is likely to develop, it may be advisable to go ahead with the anastomosis at once. On two occasions I have accidentally clamped the ureter, and in each case the clamps remained on about seven or eight minutes before this was detected. Both of these cases were women in whom I was doing a hysterectomy and in each the ureter was dissected free of its attachments for about 3 cm. In one a ureterovaginal fistula developed on the eighth day and in the other on the twentieth day. Such an experience leads me to think that in the cases where the ureter has been dissected free and then clamped, that it is better to immediately anastomose the ureter into the bladder.

With our increasing experience and more radical operative measures we are encountering more and more ureteral injuries, with consequent fistulæ. The former frequent cause of this condition, labor, is now seldom a factor, and it is very unusual to see a fistula from such a cause.

Whether or not a ureteral fistula, of either the abdominal or vaginal type should be repaired depends upon a number of factors:

- a. Location of the fistula.
- b. The presence or absence of infection.
- c. The function of the kidney on the involved side, as well as the combined function of the two kidneys.
- d. The general condition of the patient and the extent of trouble in the pelvis.

*a. Location of the Fistula.*—A mental review of the operation, if done by oneself, will often give an idea of the probable manner in which the ureter was injured and the location of the injury. The best information is however, to be obtained by a combination of vaginal, cystoscopic and ureteral examinations, at the same time using indigo-carmin or phenolsulphonephthalein to test the function of the kidney. Before attempting an operation, the location of the injury, the presence or absence of infection, and the function of the kidney must be known. It must however, be remembered, that the point at which a ureteral catheter becomes obstructed, does not represent the end of the kidney portion of the divided ureter.

It may be quite a distance further up. I saw one patient in whom there was not the slightest resistance to the passage of the catheter, this being due to the fact that the catheters on both sides passed directly into the vagina. In estimating whether or not an anastomosis can be done, the extent to which the bladder can be elevated after loosening some of its attachments, and the degree to which the kidney can be lowered, by a similar procedure must be considered, for the distance thus gained often makes practical an otherwise impossible anastomosis.

*b. Presence or Absence of Infection.*—A moderate degree of infection is not of itself a contraindication but is often one of the indications for operation, as such slight infections usually clear up after the formation of a proper anastomosis. In all these fistula cases there is more or less contraction of the tract and such contraction causes back pressure, dilatation and infection, which are relieved by the operation.

*c. Function of the Kidney on the Involved Side.*—The function of the kidney on the involved side must be determined to learn whether or not it is worth while to save such a kidney, and the combined function to determine the patient's ability to undergo an operation of this magnitude, and to live for a satisfactory period should the operation be successful. It is worse than useless to anastomose the ureter of a kidney badly infected and functionally incapacitated.

*d. General Condition of the Patient and the Extent of the Trouble in the Pelvis.*—Both the local and general condition of the patient is to be considered, for an operation should not be attempted unless the patient is in at least fair general health or, in whom the condition, *i.e.*, recurrence of carcinoma in the pelvis, contraindicates operation.

Suitable cases are those where the fistula is so situated that an easy approximation of the ureter and the bladder can be made, where the infection is only slight or moderate and where the function of the kidney is good or only slightly impaired, with the patient in good general condition, and no pelvic condition that will make the operation technically impossible.

In regard to the time after the primary operation, the most opportune is that when most of the exudate that always forms around such a fistulous tract has disappeared and before the function of the kidney has become damaged from contraction of the fistulous tract.

In the operation of anastomosing the ureter to the bladder the utmost pains should be taken, for success depends upon one throw

of the dice. Should the operation fail and should the patient not die, we will have a ureteroabdominal fistula (rarely a ureterovaginal fistula) as the result, and this with the upper end of the ureter so shortened that it is not likely that a subsequent similar operation can be done with success.

*Choice of Method of Operation.*—In the abdominal fistulæ the abdominal route is the only one that can be undertaken, while in the vaginal cases, the operation can be done by the vagina or through the abdomen. In only exceptional cases do I think the vaginal method indicated. There are rare cases where the lower end of the ureter itself can be dissected out and turned into the bladder, and for such the vaginal route is the one of choice. It is technically possible in a large number of cases of ureterovaginal fistulæ to turn the end of the fistulous tract into the bladder and relieve the patient of the leakage, but it must be remembered that the operation is one of fistulo-vesical anastomosis and that the fistulous tract will continue to contract and that the kidney will eventually be destroyed as a result of pressure atrophy and infection. I did such an operation that was successful in so far as it relieved the patient of her leakage, but two years later I had to remove a kidney that was causing a persistent cystitis, and which was devoid of function.

*Technic of Abdominal Ureterovesical Anastomosis.*—Should the anastomosis be made at the time of injury, or after the necessary resection of the ureter in the removal of pelvic organs or a partial ablation of the bladder, the technic of the actual joining of the bladder and ureter is very much the same as that to be described. Where the operation is done for fistula or stricture, I think a one-sided modified Pfannenstiël incision gives the best exposure. This starts at the level of the anterior-superior spine of the ilium and 1 inch to its inner side and passes downward in a curved direction to the midline, or just beyond,  $1\frac{1}{2}$  inches above the symphysis. The fibers of the external oblique are divided in the same direction, as are also those of the internal oblique; these latter are necessarily cut somewhat obliquely. The transversalis fascia has to be divided with a sharp knife and with extreme care, or the peritoneum will be opened. Should it be opened, it makes the operation technically easier to separate it from the transversalis fascia before closing the opening. After the line of separation of the transversalis and the peritoneum has been struck, the peritoneum is peeled by blunt gauze dissection from the lateral and then the posterior pelvic wall, the iliac vessels being nicely shown. After these come into view a search is made for the ureter on the peritoneal reflexion (and not

on the posterior pelvic wall). In these cases it is usually easily found, because of the almost constant thickening and dilatation; often this is so great as to mislead one. I know of a surgeon who looked for two hours for ureters that were directly in sight because he failed to identify the greatly thickened structures as ureters. Should doubt exist, it can often be expelled by so irritating the ureter that it will call forth its characteristic vermicular action. Should the fistula follow a hysterectomy the exposure is simplified because of the obliteration of many of the pelvic vessels, though usually these are not troublesome, the operation being sometimes done without the ligation of a single vessel. After locating the ureter, usually near the pelvic brim, it is best to grasp it with a pair of Allis clamps, in such a way that the teeth come together beyond the ureter and so do not injure it. By applying these clamps successively lower and lower, and using blunt gauze dissection the lower end of the ureter is easily reached, or the point where the divided ureter enters the scar tissue that is always around the fistula. Occasionally it is necessary to double ligate and divide the uterine artery, to gain better access to the lower end of the ureter, but this can as a rule be done without trouble. All small bleeding vessels should be controlled with ligatures, for the best work can be done only in a field free from blood. The ribbon form of retractor aids materially in exposing the operative area.

The ureter should not be freed from its sheath or the peritoneal reflexion except for the inch that it is to pass into the bladder, for such separation from its attachments imperils the blood supply and the nutrition of the ureter. When a suitable point for division of the ureter is determined and attained, it is here double clamped and cut. The lower end is ligated, not so much to prevent the leakage of urine from the bladder, as to control a small vessel that is usually found in the sheath just under the ureter. The upper portion of the ureter is then dissected free of all attachments for one inch or an inch and one-quarter—this limited dissection I believe to be of great importance in conserving the nutrition of the ureter.

Should there be difficulty in bringing the ureter and bladder together, the bladder may be mobilized by freeing the attachments on that side, and the kidney similarly treated as first advocated by Bovè and practised in the human being by Payne.

There are numerous methods of making the union between the bladder and the ureter, but the following is the one that I have found most satisfactory. The nearest portion of the bladder is located in the lower angle of the wound, deep bites about 1 inch



apart taken with weak Allis clamps. By making traction on the clamps a double layer of the bladder is brought up in the lower portion of the wound. A sharp pair of artery forceps is then pushed through both these walls, entering anteriorly and emerging posteriorly; the forceps is thus made to enter and pass out of the bladder. The bite of the ureter held in the forceps is then transferred to the forceps that has passed through the bladder, when by traction on this forceps the ureter is drawn into, and again out of the bladder. While held in this position the ureter is stitched, where it passes through the posterior bladder wall, with four or five interrupted sutures of fine silk. Care is taken that one of these includes the sheath of the ureter where the free dissection ends. This prevents the pulling of the ureter out of the bladder. The forceps on the end of the ureter is then removed, as are also the two used to elevate the bladder. By then picking up the anterior wall of the bladder with another pair of forceps and drawing it forward, the free end of the ureter is made to slip into the bladder cavity. The opening in the anterior wall of the bladder is closed with a running stitch of fine chromicized catgut.

This method of making the opening in the bladder, I believe is preferable to the one in which forceps are passed through the urethra to accomplish the same purpose, as that necessitates another assistant and the disarrangement of the patient and the operative field without offering an advantage. The puncture method I believe better than making an incision into the bladder, which I have always found rather difficult. It is usually found after the opening is made that it is larger than anticipated or desired, and even though it can be sutured, I think the chances of good union are lessened.

If there appears to be any traction on the line of suture, it is well to attach the bladder near the point of anastomosis to the lateral pelvic fascia.

A rubber tissue drain is inserted into the wound beneath the transversalis fascia, but does not come in close apposition to the anastomosis. Even though the wound looks dry, there is much serosanguinous leakage for the first seventy-two hours, at the end of which time the drain is removed. The wound is closed in layers with fine chromic gut and Michel clamps on the skin.

A Pezzer retention catheter is placed in the bladder for seven to eight days. The patient is put on monobasic sodium phosphate 20 grains, three times daily before meals and urotropin, 15 grains three times daily after meals a few days before operation. This

is resumed as soon after operation as the stomach will permit and continued well after the time the catheter is removed. The catheter should be removed daily for cleansing as a stoppage may wreck the operation, and the bladder should be irrigated with boracic acid solution twice a day.

The chances for union between the bladder and the ureter are claimed to be greater when the operation is done as an intraperitoneal procedure, but I believe the greater risks of an infection that will carry the patient off are more than counterbalanced by the safety as far as life is concerned of the extraperitoneal operation.

45 EAST SIXTY-SECOND STREET.

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## THE INFLUENCE OF PREGNANCY ON THE DEVELOPMENT, PROGRESS, AND RECURRENCE OF CANCER.\*

BY

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(With five illustrations.)

THE two cases herewith reported are significant in relation to the question of the possible influence of pregnancy upon the initiation, progress, and recurrence of cancer in the pregnant individual.

CASE I.—A. B., thirty-eight years old; married; no pregnancies previous to the one herein reported. In November, 1907, a small lump was first noticed in the right breast. The breast was removed in November, 1910. In February, 1911, a small gland, the size of a pea, appeared above the right clavicle. No treatment was instituted for this, and conditions remained practically the same until December, 1911. About this time the patient became pregnant, and the mass above the clavicle began to grow very rapidly. Another mass appeared in the right axilla. Diagnosis: *Recurrent carcinoma*.

March 9, 1912, the patient was admitted to my service at the New York Skin and Cancer Hospital. She was then nearly five months' pregnant. A large mass was found in the right axilla and another above the clavicle, with metastases in the right lung.

The danger of continuing the pregnancy was explained to the patient and to the family, but they refused to permit its termination. Operation was advised in the hope of ameliorating the patient's suffering.

In this case the lump above the clavicle was probably not actively malignant until the pregnancy took place.

Treatment with thermoradiotherapy, according to the method of de Keating Hart, was instituted. The patient remained in the

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hospital until June 21, 1912, during which time the cancer extended rapidly, despite treatment. The patient died February 2, 1913. The baby, born at term, lived one month.

CASE II.—M. F., thirty years of age; married; two children previous to the present pregnancy. Admitted to the New York Polyclinic Hospital, May 4, 1911. About three months before this she had noticed a small discolored spot the size of the head of a pin, without elevation, just below the inner canthus of the left eye. This developed rapidly and was about the size of the head of a pencil (one by one centimeter), when she was admitted to the hospital. The growth, with an apparently safe margin of healthy tissue, was excised May 5, 1911. Pathological examination showed the growth



FIG. 1.—CASE II. Recurrent sarcoma involving inferior lid and superior maxilla.

to be sarcoma. On May 16th, less than two weeks after the excision of the growth, a second operation was performed for the removal of a local recurrence. One month later, June 16th, the entire contents of the orbit, together with the periosteum, were removed. On July 7th, a third operation was performed, for the further removal of the recurrent mass, which now involved the walls of the orbit, the base of the nose, and the right jaw.

On July 19, 1911, the patient gave birth to a healthy child. On August 17, she died of exhaustion, the sarcoma evidently involving the brain in its rapid recurrence and extension. At the time of the first two operations the patient was advised to permit the termination of the pregnancy, but this was refused on religious grounds. The successive operations were performed for the relief

of pain, to lessen the feto, and to prolong the patient's life until the child was born.

From the dates given, it is seen that the beginning of the development of the sarcoma is closely related to the beginning of the pregnancy, and that the frightful rapidity of development and of recurrence after operation was commensurate with the progress of the pregnancy. Of course, it cannot be stated with assurance that the prompt termination of the pregnancy would have effectually checked the further progress of the sarcoma, after removal of the initial lesion, but such an assumption is permissible, in the light of experience and observation.



FIG. 2.—CASE II. Growth of orbit, antrum, and nasal fossa.

The condition before and after the last operation is shown in the accompanying pictures.

The fact that the coincidental development of the cancer and the fetus did not affect the latter, may be judged from Fig. 5, which shows a well-developed, apparently healthy child, a few days after birth. The subsequent history of the child was not obtainable.

In cases like these, especially like the second, there seems little ground for delaying or for failing to terminate the pregnancy as early as possible. This is in line with experience, as well as with the clinical and experimental observations of others.



It is notable, however, that relatively little attention seems to have been devoted to the question of the influence of pregnancy on the development of cancer, other than cancer of the uterus and the breast, particularly the former. A brief résumé of some of the recorded observations follows.

#### CLINICAL.

The earliest review of the cases of pregnancy complicating cancer of the uterus seems to be that of Chohnstein(1), who, in 1873, collected the previously recorded cases.



FIG. 3.—CASE II. Soft tissues removed, leaving large cavity.

Bryant(2), discussing the subject with reference to the breast, reported five cases. "Should the breast of a pregnant woman be the seat of cancer," he said, "the disease as a rule will progress rapidly, and should the stage of suckling be reached, its increase will be still more rapid. These cases are happily rare."

Hunter(3), reviewing the subject in 1888, said: "Malignant disease of the vulva, as a primary affection, is rare, and few cases have been observed during pregnancy. It would probably be aggravated, and progress rapidly, as does malignant disease elsewhere." "Malignant disease of the vaginal wall, whether primary or second-

ary, is likely to increase with alarming rapidity after conception has taken place." "Malignant disease of the cervix does undoubtedly often receive a stimulus from pregnancy, and begins to grow with astonishing rapidity, so that within a few months the new-growth may fill the vagina. I have had occasion to amputate the cervix in two such cases before delivery could be effected. In one of these, a high amputation had been performed three years previously, and the patient was supposed to have been cured. After becoming pregnant there was a recurrence of the disease." "There seems to be good reason for believing, in the absence of positive proof, that in case of laceration of the cervix, with much hypertrophy and rolling



FIG. 4.—CASE II. Further recurrence involving mouth, nose, orbit, and face. Patient on operating table for last operation. July 7, 1911.

out of the tissues, each additional pregnancy enhances the danger of subsequent epithelioma. Where there is a tendency to malignant disease pregnancy probably increases the liability to its development." "Olshausen believes that ovarian tumors increase in size during pregnancy, and remarks that 'the same fact has been observed in regard to other tumors of the vulva, as well as myoma and cancer of the uterus.' Lücke (*Monatschrift für Geburtshülfe*, 1862, 261) calls attention to the fact that malignant tumors in all parts of the body grow faster in pregnant women. Wernich believes that pregnancy favors the change of benign into malignant tumors."

In 1894, Theilhaber reviewed the cases of pregnancy complicating

cancer of the uterus reported from the time of Chohnstein's contribution, in 1873, to 1893.

In 1897, Dakin(4) expressed the following view of the subject: "Pregnancy has a very stimulating effect on the growth of cancer of the cervix, owing to the increased activity of nutrition which is thus established. It has, it is true, been held by some that preg-



FIG. 5.—CASE II. Healthy child of patient. July 19, 1911.

nancy actually retards growth, but it is highly improbable. As against this belief, it is undoubted that cancer grows much more slowly after labor has occurred, and in some cases the symptoms have remained in abeyance for several months after delivery." "Seeing the tendency to rapid growth during pregnancy, and the proneness of the ovum to premature death and expulsion, there is no doubt that in the early months abortion should be induced.

As a general rule, the best treatment before the sixth month is to empty the uterus, and then deal with the cancer in the most suitable manner." In the last three months, he holds, it is a question whether labor should be induced and the child extracted, or whether the patient should be allowed to go to term. "The effect of pregnancy on ovarian tumors, whatever their nature, is as a rule to make them grow more rapidly.

Shield(5), discussing the question of pregnancy and cancer of the breast, says: "The rapidity with which cancer spreads in the breast of a pregnant woman, and the ravages committed by its sloughing and disintegration, are well illustrated by a case related by Gay, when a cancerous breast in a young woman of thirty-seven increased to an enormous size during pregnancy, and in about ten months underwent such sloughing and destruction as to open the pleural cavity in six days.

"This is very similar to Billroth's(6) case, where the disease developed in both breasts five weeks before a confinement, and death occurred in six weeks after observing the disease. The *mammæ* bore soft vascular tumors of an enormous size, and secondary deposits were universally found.

"In Wilson's case(7) the patient, a lady, aged forty-five, declined operation, and became pregnant for the second time. She died about a month before her confinement, the progress of the disease being fearfully rapid, probably not much more than nine months.

"At consultations at St. Bartholomew's Hospital, a case of the same nature was shown by the late Sir William Savory(8). He believed that pregnancy materially hastened the growth of these tumors. All the surgeons were in favor of removing the breast, although the woman was lactating. The child had been already weaned.

"Horne's(9) case of carcinoma in a parturient woman of thirty-six was peculiarly rapid. Very similar to Wilson's case is another related by Gordon(10), but the disease was not so severe and rapid, and removal was affected with temporary cicatrization. Treves(11) has related a case where cancer of both breasts occurred during pregnancy, with the development of very numerous nodules in the skin. It is not clear that the pregnancy greatly influenced this curious condition." The author refers to Bryant's cases (*q. v.*).

Cullen(12) expresses himself quite positively with regard to the method of procedure in cases of cancer of the uterus complicated by pregnancy. "We thoroughly agree," he says, "with the view of Kaltenbach, that wherever a carcinoma occurs during pregnancy



the radical operation, if possible, is to be performed at once, and must not be delayed in order to afford a chance of life to the child. All are agreed that during the early months operation should be performed immediately, but where the woman is in good condition, and the child is within a month or two of viability, the operator is sometimes prevailed upon to wait.

"With our present knowledge of carcinoma, both clinically and from a pathological standpoint, the inclination to yield to their considerations and to delay is rapidly disappearing." "Whenever an operable carcinoma of the cervix is detected, a radical operation should be performed at once. By delay we shall probably sacrifice the mother's life, and at the same time have only a limited chance of saving the child."

Marx(13), discussing the question of malignancy complicating pregnancy, says: "The plea for an early diagnosis of carcinoma holds good under these conditions, even as it is essential in cases where no pregnancy exists. We might say it is probably even more urgent to diagnose carcinoma during pregnancy than under ordinary conditions, for the stimulus which the uterus obtains from the presence of a fecundated ovum, causing a greater congestion and a more rapid growth of the lymphatics, will, we surmise, be an important factor in the rapidity of the growth of a malignant tumor during pregnancy."

"Once a diagnosis of carcinoma is made, and a successful issue is to be premised, the uterus must be emptied by any measure that serves the mother the best chances. The child cannot be seriously taken into consideration, for in the cases discovered early the period of viability has as yet not been reached."

"Occasionally, there is presented for our consideration a patient who is the victim of a malignant growth in some distant organ not connected with those of procreation, and that patient pregnant at the same time. Generally speaking, there is no indication for us to interfere in these cases. Except that we are to deal directly with the advice to remove the tumor, if removable, we can do nothing except we feel that the pregnancy is an associate evil factor in the case. Then it behooves us to terminate the gestation."

Nijhoff(14), in reporting one case of pregnancy and carcinoma of the rectum, collected twenty-two published cases. He held that as the child is not viable the operator must choose between terminating the pregnancy and waiting until the child is viable. He advocated the former procedure, believing that by waiting an operable tumor might be allowed to become inoperable.

Wertheim, discussing Wilson's(15) paper on cervical cancer and pregnancy, said, in part: "During the past eight years I have had under my care six cases of cancer of the uterus complicated by pregnancy. In only one of them was the pregnancy advanced to full term; in another the pregnancy was in the sixth month; in the other four cases in the first four months. In all six cases I performed the abdominal operation by the method I described here yesterday. As you know, the gynecologists hold that cancer of the uterus, complicated by pregnancy, is specially malignant, on the supposition that pregnancy and labor favor in a particular way the propagation of the disease into the parametrium and lymphatic glands. Therefore, even such operators as still persevere in the vaginal way of operating on cancers of the uterus prefer the abdominal way in this complication, in order to make the operation more radical."

Senator and Kaminer(16), discussing the influence of pregnancy and the puerperium on cancer, say: "The opinion was formerly held that the occurrence of pregnancy exercises a very favorable influence upon the cancerous degeneration. V. Siebold maintains even that he has observed a spontaneous cure of genital cancer owing to a supervening pregnancy. French obstetricians, it is true, do not go quite so far, but Pinard, for instance, considers the rapid growth of cancer during pregnancy as by no means proved, and Varnier agrees with him while reporting a somewhat remarkable case: In October, 1897, the presence of an enormous carcinoma of the portio was ascertained in a pregnant woman. The following year there was again a pregnancy, and death did not take place until October, 1900.

"This opinion is interesting in view of Zweifel's well-known experiment. He marked by means of a loop of thread the borderline between the healthy and the diseased parts in a case of cancer during pregnancy. A fortnight later the disease had progressed by about two finger-breadths, no doubt a proof of the enormous growing tendency in this case."

"On the whole," conclude Senator and Kaminer, "it may be regarded as certain, that with a few rare exceptions, pregnancy and puerperium exercise an exceedingly unfavorable influence on cancer. The permanent hyperemia, the severe relaxation of the tissues, favor a rapid spread of the process to a very great extent, and so an intense aggravation occurs as a rule far more quickly than in the absence of pregnancy, and it becomes impossible for the diseased focus to be completely removed. Or else, as it has been observed in a number of cases, the local destruction makes such

rapid progress during the puerperium that the women succumb to their illness in the first few weeks after the confinement, even though the latter has been a comparatively favorable one."

Cheesman(17), in reporting two cases, one of cancer attacking the breast during the course of pregnancy, and the other of pregnancy occurring as a complication of already existing cancer, says: "Whatever theory we adopt as to the nature and etiology of cancer in general, it must be conceded that when located in the female breast its development is influenced by some unexplained sympathetic correlation with the pelvic organs. The clinical fact has long been recognized, and is sometimes mentioned in text-books, that under the physiologic stimulus of pregnancy mammary cancer takes on a specially malignant character. And, on the other hand, Beatson by ablating the ovaries in some cases of late inoperable cancer of the breast, was able to effect the disappearance of the disease. So we may say of this mysterious epithelial reproduction, this cellular new birth, that whatever its ultimate character, it may be stimulated to unwonted efflorescence; or retarded and even extinguished, according as the uterus and appendages are rendered active or functionally obsolete."

In the case of pregnancy complicating cancer of the breast, Cheesman states that the breast, lymphatics and muscles were removed by wide circumsection. All went well until nine months after the operation, when the patient reported herself two months pregnant. The uterus was immediately emptied. "But even at the end of the second month we were too late," he said. "Did my pregnancy bring this back again?" asked the patient. "She read the truth, and pierced my conscience with the searching query: 'Then why did you not warn me?'"

Hirst(18), with reference to cancer of the cervix, holds: "If the condition is operable when discovered, the uterus should be extirpated, preferably by the vaginal route, which is always practicable for the first four months. Twenty-nine such operations have been collected without a single death. Dührssen has proposed the evacuation of the uterus by the vaginal route after the fourth month, if necessary . . . . In operable cases the fetus should receive no consideration." "Cancer and sarcoma of the vagina," according to Hirst, "should be operated upon, regardless of the pregnancy, by enucleation of the vagina and by hysterectomy." "Mammary tumors," he holds, "may take on a very rapid growth under the stimulus of pregnancy. A simple adenoma the size of a walnut, quiescent for years, may reach the size of a cocoanut during pregnancy."

De Lee(19) found that of 19,400 consecutive obstetric cases at the Chicago Lying-In Hospital and Dispensary, only one was complicated by cancer of the cervix, which he considered a fair index of the frequency of the condition. "The effect of pregnancy upon cancer," he states, "is unfavorable. Rarely the growth begins after conception; usually the pregnancy supervenes after the cancer has started. Owing to the vascularization and lymphatic inhibition of the cervix caused by pregnancy the tumor grows fast and invades the lymphatics and glands very quickly." Discussing the question of treatment, in such cases, De Lee says: "If an operable cancer of the cervix is discovered in the early months of pregnancy, this question arises: In view of the fact that recurrence in such cases is so quick after delivery and the woman, therefore, doomed to early death, would it not be best, in the interests of the child, to wait until the termination of the pregnancy? Pinard, Pozzi, and most French authors say yes, but the German and American authorities believe in the immediate radical operation."

Zimmermann(20), one of the most recent contributors to the subject of cancer and pregnancy, holds that "There are now few who dissent from the general proposition that the occurrence of pregnancy in a woman suffering from any form of malignancy has a tendency almost always to hasten the ravages of the disease. The same is true of tuberculosis or any wasting disease, and is more generally the rule in growths of the breast and uterus, on account of the increased blood supply in these organs during gestation. The already wasted system is unable to stand the burden and strain of prolonged gestation, and there results either a spontaneous interruption of pregnancy, or, if nature fails to come to the rescue, the pregnancy continues at the expense of the debilitated system, the growth makes rapid advance, and the woman shortly succumbs."

From the above brief digest of the subject it is clear that the weight of opinion, from the clinical point of view, substantiates the position that pregnancy exercises a stimulating, and hence a malign influence upon coexistent cancer, not only of the organs most closely concerned in the pregnancy, namely, the uterus and the breast, but of any part of the body, possibly excepting some forms of epithelioma.

Is there evidence, other than clinical observation, of the correctness of this view?

#### EXPERIMENTAL.

The first to note, experimentally, the influence of pregnancy upon cancer was Morau(21) who, in 1891, published his well-known



inoculation experiments with white mice. An animal, inoculated in one breast with tumor material from another mouse, presented nothing unusual at the point of inoculation for about two months. At the end of this time one could establish a slight nodosity at the point of inoculation. This was coincidental with the impregnation of the mouse. During the whole of its gestation the tumor remained stationary, and during the last days one could even believe that a slight regression had occurred. The inoculation was made in June. In September the mouse gave birth to a litter of six young, which were apparently normal and healthy, and which she suckled. From this moment, however, the tumor underwent an extremely rapid evolution, soon forming, in itself, almost a third and a half of the total mass of the animal. It could also be noted that the neoplastic mass had undergone, at certain points, hemocystic degeneration, in relation with the rapidity of its development.

Another animal, inoculated at the same time, in the axilla and groin, with epitheliomatous fragments of the same origin, presented nothing abnormal up to September. At this time one could establish the presence, in front of the axillary fold, close below the neck, a small nodosity of the size of a large millet seed. This animal fecundated in September, and gave birth to a litter of eight little ones the first week in October. She suckled them. Aside from the rapid development of the primitive tumor, another small nodule appeared in front of the point of inoculation.

From these two observations Morau concluded that gestation brings about an arrest of evolution of epithelial neoplasms, but that this is only temporary, the development of the tumor afterward being all the more rapid.

In a subsequent communication(22) Morau noted that in animals which were reserved for reproduction, pregnancy had a remarkable influence on the development of the tumors, which, arrested at the beginning of gestation, remained stationary until after delivery, when they took on rapid growth, with hemocystic degeneration, and at times generalization.

In a résumé of his inoculation experiments Morau(23) says, with reference to the influence of pregnancy on cancer: "I have been able to remark, and recent experiments have confirmed my first observations, the influence exerted by gestation upon these neoplasms. Two cases may be presented—either the neoplasm appears in the course of gestation or the latter may supervene when the neoplasm has already begun its evolution.

"In the first case: here there is nothing particular, gestation pursues

a normal course and the tumor develops slowly according to its habit.

In the second case, when gestation begins in the course of the evolution of the tumor, the latter appears to experience a period of arrest which is very manifest (one subject in the eighth series; two in the tenth series of 'héréditaires' and two in the fourteenth series). This arrest lasts throughout gestation, and at once, after littering the evolution of the tumor goes ahead with as much increase of rapidity as will offset the greater or less retardation due to pregnancy, as I have observed often in these cases. (See Latuste, 'De la gestation retardée de la souris,' Notes de zoetique des rongeurs). We shall then see that the tumor takes on an excessive development, and that the animal falls rapidly into marasmus. One could compare this fact with that which occurs in gestation in the course of pulmonary tuberculosis. We know that terrible impulse which gestation gives to this disease and with what rapidity patients succumb to it. The following fact confirms and justifies all the more, in my opinion, the analogy which I am trying to establish between these two cases. In fact gestation acts on a manifest tumor like a veritable traumatism; therefore, it is not surprising, despite the very rapid extension of the tumor, to see the supervention of their generalization in several cases. It is thus that the subject in the eighth series, upon which the injurious influence of gestation was so manifest that it had struck me very peculiarly, did not hesitate to present a series of small nodosities developed far from the point of inoculation, in such fashion that at death four distinct neoplasms were present. Under the influence of trauma determined by gestation and lactation these had been a veritable generalization of the neoplasm."

Following Morau's observations other research workers made similar reports. Thus, Loeb(24) states that "In the original piece and in the piece transplanted into the same rat, pregnancy induced a large increase in the size of the tumor, especially in the glands."

In a recent communication Loeb(25), discussing the various factors which initiate and stimulate tumor growth, under the head of *chemical formative stimuli*, says: "From the data which are accumulating, it may be possible in a provisional way to classify these chemical stimuli into (a) general stimuli, applying indiscriminately to a large number of tissues; (b) specific stimuli acting only on specific tissues. Chemical factors of the former kind are probably operative in *young* organisms, in contradistinction to old ones, and during pregnancy. In the last-named condition not only factors favoring growth are apparently at work, but also

factors antagonistic to growth. The balancing between these two forces seems to lead to a different result in different species. Thus in the rat, pregnancy seems to favor growth of embryonic tissues under certain conditions; in the mouse, it is unfavorable to such growth. Tumor growth is affected in a way similar to normal tissues by the chemical conditions prevailing in young and old organisms respectively. The difference in the growth of certain organs in young and old animals seems to depend on substances circulating in the body fluids. Analogous substances seem to hasten or to delay growth phenomena associated with metamorphosis in amphibia. There is also some indication that during pregnancy spontaneous tumors may assume a marked increase in size in the rat, while in the mouse, pregnancy is an unfavorable factor, especially for the growth of transplanted tumors. In future it will be necessary to distinguish more sharply than has been done in the past between the effect of pregnancy on the growth of spontaneous and of transplanted tumors."

Roux studying the effect of pregnancy on implanted embryonic tissue, says: "The effect of pregnancy of the host on implanted tumor has been the subject of many observations; and it has been found that, in general, the growth of the neoplasm is retarded during gestation and may cease. The cause for this retardation is not known." Roux refers, in this connection, to the work of Haaland, Uhlenhuth and Weidanz, and Cuénot and Mercier.

Herzog(26), working with white rats, found: "In two of the animals operated upon the tumors grew quite slowly. In one, a pregnant female where a piece had been implanted subcutaneously into the lower abdominal region, the tumor grew quite rapidly. This female gave birth to a litter of young ones, which she raised successfully in spite of a growing tumor. Pregnant females were subsequently repeatedly subjected to implantation of pieces of tumors. It was invariably found that when a piece was implanted subcutaneously into the abdominal region of a pregnant female, the tumor grew with unusual rapidity, attaining a large size in two or three weeks. About thirty to forty young ones were successfully raised from such females; not one of these young ones has spontaneously developed a tumor."

Apolant(27), commenting upon certain conclusions drawn by Levin and Sittenfield, of the Crocker Laboratory ("Studies on Immunity in Cancers of the White Rat," *Jour. Exper. Med.*, 1911, xiii, 511), said: "It should be further noted that Drs. Levin and Sittenfield misinterpret some of the facts and fail entirely to

mention others which demonstrate the existence of athrepsia. The former applies to their presentation of the relation of tumor growth to pregnancy. They refer on the one hand to Haaland (*Berl. klin. Wchnschr.*, 1907, xlv, 713), who first observed the resistance of gravid animals to tumor inoculation, and on the other to Herzog (*Jour. Med. Res.*, 1902, viii, 74), who described a more rapid growth of the tumor in the course of pregnancy. They conclude immediately from these observations that pregnancy simply inhibits the take of an inoculated graft, but that it stimulates the growing tumor to stronger proliferation. This conclusion is entirely arbitrary, and rests on a mistaken citation. For Herzog speaks not of tumor-bearing animals, which became pregnant, but of inoculation of pregnant animals. On the other hand, Cuénot and Mercier found that the beginning of tumor growth can be temporarily inhibited by the onset of pregnancy, and by lactation, only to proceed thereafter in a normal manner. The apparent inconsistencies in the observed relations between pregnancy and tumor growth are probably explained, as Fichera has already observed, by the fact that, if numerous embryos are present, the specific food stuffs, which are often the same for embryos and for tumor cells, are almost wholly demanded by the former, but that, on the other hand, when only a few embryos are present, the production of the specific food-stuffs, increased by pregnancy, comes to benefit the tumor cells also. It is reasonable and entirely consistent with the principle of athrepsia that occasionally an already strongly growing tumor should draw still more strongly on the food stuffs abundantly produced at the advent of pregnancy, and so grow still more quickly."

Woglom(28), reviewing the special phase of cancer under discussion, said: "It has been asserted and denied that the existence of pregnancy rendered animals less susceptible to implantation; and although Morau and Herzog had written that gestation accelerated the evolution of tumors, and Bashford and Murray that 'Pregnancy and full sexual activity in the male (as determined by microscopical examination of the testes) constitute no bar to successful transplantation,' Haaland, on the contrary, had found that pregnancy often exerted an inhibitory influence upon the proliferation of tumors, the effect of which was to produce a striking retardation of their growth in pregnant animals as compared with animals not bearing young. Uhlenhuth and Weidanz had also observed this retardation and furthermore, that spontaneous regression occurred oftener in pregnant mice.

"Bridré chose males for inoculation whenever it was possible



because of the low percentage of positive inoculations occurring in pregnant females, while Ehrlich had noticed repeatedly that inoculation into animals bearing young was followed with extraordinary frequency by negative results, or was, at least, attended by the development of tumors in which growth was greatly retarded.

"Pregnancy, according to Albrecht and Hecht, whether already present at the time of inoculation, or commencing afterward, influenced the establishment of a tumor or its subsequent growth just as little as the presence of a tumor influenced conception or pregnancy." "Fichera explained the inconsistencies that had been observed in the relations between pregnancy and tumor growth by assuming that when many embryos were present the specific food stuffs were almost wholly demanded by them, while if there were but few the nutrient material was available for the tumor cells as well." It is pointed out that Ehrlich considered that the negative result attendant upon the inoculation of pregnant animals, or the slow growth of such tumors as did occur, was added evidence in favor of the hypothesis of athrepsia.

#### CONCLUSIONS.

From the cases herewith reported, from the clinical observations, as portrayed in the foregoing digest of the reports of some of those who have contributed to the subject, and from the experimental data presented, the following conclusions in relation to the human subject seem justified:

(1) That pregnancy increases the rapidity of growth of coexistent spontaneous cancer.

(2) That if, as some contend, there is a retardation of the malignant process during gestation, the significance of this manifestation should not be misunderstood. Rapid increase of growth may follow delivery.

(3) That while the stimulating effect of pregnancy is exerted more markedly upon the organs directly concerned with the pregnant state, cancer in any other part of the body, as in Case II, may be influenced in like manner.

(4) That, if the cancer is removable, in order to secure the best chance of permanent cure, the pregnancy should be terminated, regardless of any consideration for the child.

(5) That, even in advanced cases of malignant disease, in which there is no hope of cure for the mother, it is a question whether she should not be given whatever chance of prolongation of life and, more important, mollification of suffering abortion may give.

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THE CAUSES OF DEATH IN CHILDBIRTH; MATERNAL  
MORTALITIES IN 100,000 CONFINEMENTS AT  
THE NEW YORK LYING-IN HOSPITAL.\*

BY

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THE vital statistics of childbirth in the community in general are reasonably open to considerable suspicion. Deaths from puerperal infection are often crowded in under the heading of typhoid or pneumonia by the medical attendant, or an unrecognized rupture of the uterus goes down on the certificate as postpartum hemorrhage, or later as peritonitis. On the other hand, hospital statistics are unavoidably exaggerated both in the frequency of abnormalities and in the death rate, on account of the contamination of the figures by the great number of serious referred cases.

This is particularly so at the New York Lying-In Hospital, where no woman is refused admission, no matter how ill she may be. Many women have been received in a dying condition, and forty women have died within less than an hour after their admission, of the hemorrhage, convulsions, shock or sepsis, for which they were sent to the hospital by their attending doctors or midwives. Three hundred and fifty-six of the deaths recorded have been among our postpartum admissions. Naturally in these deaths, and also in those among the emergency cases entering the hospital far advanced in labor, we feel that our responsibility is most fragmentary, and we cannot hold ourselves wholly accountable for the unfortunate outcome.

However, it is instructive to us to review the various causes of death in childbirth where the intensive hospital study of the sick woman and occasionally postmortem examination enable us to reasonably determine the true cause of death.

It is in the outdoor service especially that we are able to appreciate the approach to the irreducible minimum to be obtained in private practice and where the figures are not distorted by the inclusion of the emergency failures of others.

\* Read at the Thirtieth Annual Meeting of the American Association of Obstetricians and Gynecologists, Newark, N. J., September 17-19, 1917.

From the organization of the service of the Lying-In Hospital in 1890 until July, 1917, the institution has cared for, in the wards and in the homes of the patients, 115,439 women. Of these 7213 were gynecological ward cases and women late in the puerperium; 37,483 were parturient and recent puerperal admissions to the wards, and 70,743 were labors conducted in the tenements.

On the indoor service, abortions, ectopics, women less than ten days postpartum, and parturients at term, are all classed under the somewhat arbitrary term "confinements." Subtracting the necessary percentage, the number actually confined at or near term indoor was 32,116. Of these, 23,130 were regular applicants, applying for examination and advice one to three months before labor, and 8986 were emergency labors. The latter include both those who had not previously applied to the hospital, and cases of dystocia referred in by their unsuccessful medical attendants.

Of the 70,743 confinement cases on the outdoor service, 1662 were abortions, leaving 69,081 confinements in the outdoor at or near term. In all 101,197 actual confinements at or near term have been conducted by the hospital, and it is with the mortalities in these that we are especially interested.

For purposes of study it is necessary to divide the mortalities into groups. In the outdoor service, in 69,081 actual confinements, 218 women died. Of these 218, 137 died in their homes, and 81 after transfer into the wards of the Lying-In or other hospitals, so that 218 is the full maternal mortality in the tenement service to date. This represents one death in every 317 women confined, or 0.31 per cent. mortality.

In the last eight years the maternal mortality of the outdoor tenement service has fallen from one death in every 312 confinements to one death in every 326 confinements.

On the indoor service, of 23,130 regular applicants confined, 109 died. This is one death in every 212 women confined, or 0.47 per cent. One important reason for the somewhat higher mortality among the indoor regular applicants over the outdoor is the much greater proportion of primiparæ on the indoor service. In the tenement service twenty out of every 100 labors are primiparæ, while on the indoor service forty-eight out of every 100 are primiparæ.

When we consider the emergency cases confined in the hospital, the death rate rises tremendously. These were women who either had never submitted to an antepartum examination or to prenatal care, or who were sent in by their midwives or doctors after failure to deliver. Among these 463 died, one in every twenty



deliveries, or 5 per cent. The comparison between the mortality of the regular applicants and that of the emergency labors is a striking commentary on the necessity and value of the prenatal examinations and advice that the Lying-In Hospital has afforded its regular applicants during the past twenty-five years.

While we believe our death rate to be low, both in our outdoor confinements and in our regular indoor applicants, it is disconcerting to find that even in these selected groups the predominating cause of death is puerperal infection. The one element of mortality in obstetrics, of which we are inclined to boast, and that we ought to have most certainly under our control, causes more than twice as many deaths as any other single complication. There were twenty-three deaths from puerperal infection among the 23,130 regular applicants confined indoor, and fifty-nine deaths from puerperal infection among the 69,081 outdoor confinements; a mortality of 0.95 per thousand, and 0.85 per thousand, respectively.

In the deaths occurring among the postpartum admissions and the emergency labors handled by a succession of midwives and doctors before admission, considerably more than one-third died of puerperal infection.

Eclampsia ranks second on the list as a cause of maternal death, accounting for ten deaths among the indoor regular applicants, or 0.43 per thousand confinements and for twenty-six deaths on the outdoor service, or 0.37 per thousand confinements.

The third most frequent cause of death is peritonitis after the performance of Cesarean section. Thirteen deaths occurred among the indoor regular applicants and three among the outdoor cases referred into the hospital for Cesarean. These deaths might reasonably be included under the heading of puerperal infection.

Next in importance come rupture of the uterus and placenta previa. Our results in placenta previa are better among the indoor regular applicants than among the outdoor, and of late years all cases of placenta previa occurring on the outdoor service are transferred indoor, if possible, for delivery. Five died of placenta previa among the indoor regular applicants, 0.26 per thousand, and twenty-five among the outdoor applicants, or 0.36 per thousand. Of ruptured uterus, there were five deaths indoor and twenty deaths outdoor, or 0.26 per thousand and 0.28 per thousand.

Deaths from nephritis, broken cardiac compensation, pneumonia, shock and exhaustion from prolonged labor, and postpartum hemorrhage rank next. Then come deaths from shock and hemorrhage after Cesarean section, tuberculosis, acute toxemia of pregnancy

without convulsions, and accidental hemorrhage, they are in the order named.

The lesser causes, explaining from one to three deaths each, are abdominal pregnancy, rupture of the vaginal vault, pulmonary embolism, and thrombosis, cerebral hemorrhage, appendicitis complicating late pregnancy, suicide in acute mania, carcinomatosis, brain tumor, sarcoma of the liver, and ether and chloroform narcosis. And, finally, there is a considerable number, about one-tenth of 1 per cent. of the total number of deaths, who died suddenly of unknown causes; the majority of these being put down on the reports as due to pulmonary embolism, but without autopsy for verification.

108 EAST SIXTY-FOURTH STREET.

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## THE MATERNAL AND INFANT MORTALITY IN MIDWIFERY PRACTICE IN NEWARK, N. J.\*

BY

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FOR many physicians, especially some noted obstetricians, there is no midwife problem; they have long since settled the question by vehement condemnation of the midwife and the recommendation that all who engage midwives from tradition or economic necessity should be delivered in finely appointed hospitals at public expense.

At the infant mortality convention in Philadelphia, a few years ago, an obstetrician, in a paper on "Ideal Obstetrics," declared that "the midwife is a relic of barbarism;" "a brand of infamy;" "it is impossible to train a midwife sufficiently to make her a safe person to attend cases," and again "the midwife is innocent of the high mortality she causes among mothers and babies." Several obstetricians present at that meeting approved of these sentiments and have spoken similarly since. These statements, if founded upon fact, challenge the attention of every public health official and it was with the purpose of determining whether local conditions were such as the previous remarks would lead us to believe, that this study was made.

*Maternal Mortality.*—It appears that the maternal mortality in Newark among midwife cases is no higher than in the city as a whole

\* Read by invitation before the American Association of Obstetricians and Gynecologists at Newark, N. J., September 18, 1917.

and really lower than in many other cities or countries. In the study of Maternal Mortality for the Children's Bureau at Washington Dr. Meigs gives the following rates:

		Puerperal deaths per 1000 live births
Italy	1910-13.....	2.4 or 1 in 417
Hungary	1908-11.....	3.6 or 1 in 277
England & Wales	1910-14.....	3.7 or 1 in 270
New Zealand	1910-14.....	4.0 or 1 in 250
Australia	1910-12.....	5.0 or 1 in 200
Ireland	1911-14.....	5.2 or 1 in 192
Switzerland	1909-12.....	5.3 or 1 in 188

For the principal cities in the registration area of the United States in 1910 the rate varied from 1 in 500 mothers in Fall River and Worcester to 1 in 178 mothers delivered in Grand Rapids. In Newark in 1914 the maternal mortality was 5.3 per 1000 births; in 1915, 3.6 and in 1916, 2.2. In other words, in 1914, 1 in every 188 mothers lost her life in childbirth, while in 1916 1 in every 454 mothers lost her life in childbirth. These figures indicate that there has been a considerable reduction of maternal mortality in the three years that the Department of Health has maintained supervision over midwifery, and that in 1916, with approximately 50 per cent. of the births attended by midwives, the rate of the city of Newark was among the lowest in the country.

It is of interest to contrast this record with that of Boston, where we are told the midwife does not exist, I suppose we had better say officially. Here one mother out of every 153 died in childbirth. Of the large cities, from which I have received reports for 1916, only New York showed a better record than Newark.

#### MATERNAL DEATHS IN 1916 PER 1000 BIRTHS FOR CERTAIN LARGE CITIES IN THE UNITED STATES.

City	Rate per 1000 births
Newark.....	2.2 or 1 in 454
Buffalo.....	3.2 or 1 in 312
Detroit.....	3.7 or 1 in 270
New York.....	4.6 or 1 in 217
St. Louis.....	5.2 or 1 in 192
Cleveland.....	5.6 or 1 in 180
Boston.....	6.5 or 1 in 153
Baltimore.....	6.8 or 1 in 147
Philadelphia.....	7.0 or 1 in 143

We determined the influence of midwifery practice on maternal mortality in a more direct way. We followed up, until one month

after birth, 586 mothers who had received prenatal observation from our Department and then were delivered by midwives. In this group one mother died, showing a record better than that of the city as a whole. We also investigated forty-one puerperal deaths reported by physicians to determine if there was any foundation for the impression that puerperal deaths that occurred in the hospitals or in the practice of physicians are often the result of midwifery incompetence, ignorance and neglect, the cases being referred, it is claimed, to hospitals or physicians when all the mischief has been done. Of the forty-one cases it developed that in only ten had a midwife been in attendance *at any time* and in no instance did the doctor claim that the midwife was in any way responsible for the result.

When we recall that midwives attend 50 per cent. of all the births and as much as 88 per cent. of some foreign born groups living in congested quarters, there seems to be little ground for the charge of high maternal mortality among the midwives, at least in Newark.

*Infant Mortality.*—If the midwife is the cause of much infant mortality, Newark should have a high infant mortality rate, for midwives attend 50 per cent. of all our births and from 55 to 88 per cent. of foreign born mothers. In 1916 the infant mortality rate in Newark was 89.6; New York, 93.1; St. Louis, 84; Philadelphia, 101; Boston, 104; Cleveland, 106.9; Pittsburgh, 109.2; Detroit, 112.8; Buffalo, 113.9 and Baltimore 118.1.

Is the infant mortality higher among infants whose mothers are attended by midwives?

To determine this fact we traced the attendant at birth of 1247 infants that died during 1915 and 1916, and found that quite the reverse was true. Midwives attended 49 per cent. of the births, and had been the attendant at birth of only 49 per cent. of the deaths under one year; physicians attended 39 per cent. of the births and had been the attendant at birth of 36 per cent. of the deaths under one year, hospitals delivered 12 per cent. of the births but had attended 15 per cent. of the deaths under one year.

That the infant mortality is lower among midwife cases and highest in hospital cases is shown better by the following rates.

#### INFANT MORTALITY FOR INFANTS ATTENDED AT BIRTH.

By midwives .....	70.7 per 1000 births.
By physicians.....	74.3 per 1000 births.
In hospitals.....	97.4 per 1000 births.



It may be argued that the effect upon the infant of good and poor obstetrics would appear principally in the deaths under one month of age and that in this group we will find the highest mortality among the births attended by midwives. Strangely enough, it appears that especially in this age group the infant mortality is lowest for infants attended by midwives and highest among those delivered in hospitals. Of 763 deaths under one month of age, midwives attended the births of only 36 per cent., although they attended 49 per cent. of all the births of the city; physicians attended the births of 44 per cent. of the deaths under one month and 39 per cent. of all the births of the city; while hospitals delivered 20 per cent. of the babies that died under one month of age but attended only 12 per cent. of all the births of the city.

These results will be better appreciated, perhaps, if presented somewhat differently. Of the babies attended by midwives, 25.1 per 1000 births died before the age of one month; of those attended by physicians, 38.2 per 1000 births died before the age of one month; and of those delivered in hospitals, 57.3 per 1000 births died before the age of one month.

These figures certainly refute the charge of high mortality among the infants whose mothers are attended by midwives, and instead present the unexpected problem of explaining the fact that the maternal and infant mortality for the cases attended by midwives is lower than those attended by physicians and hospitals.

It was suggested that perhaps these apparently favorable results with midwife cases may be explained by the fact that hospitals and physicians deliver a larger proportion of primipara among whom the dangers to mother and baby are admittedly greater.

Of 5702 births in Newark for six consecutive months in 1916, 29.8 per cent. were primipara, and 70.2 per cent. were multipara, and the midwives attended 29 per cent. of the primipara, physicians 47 per cent. and hospitals 23 per cent. From this we see at once that while midwives attend about one-half of all the births, they attend less than one-third of the primipara, and that while hospitals attend about one-ninth of all the births, they receive about one-fourth of the primipara.

Furthermore, the smaller proportion of primipara among foreign-born mothers may explain the better results reported in midwife cases, as it so happens that the largest part of midwifery practice is among the foreign-born mothers with the smallest proportion of primipara.

Nativity of mother	Percentage, primipara	Percentage attended by midwife for each nativity of mother	Percentage distribution of midwife cases by nativity mother
Italian.....	15.1	89.2	40.8
Russian.....	25.6	48.6	12.4
Austrian.....	27.7	75.8	24.1
United States.....	39.5	21.8	16.3

Likewise, the fact that the infant mortality rate is lowest among the group of foreign-born mothers who are mostly attended by midwives is partly explained by the fact that it is these same groups that have the smallest proportion of primipara.

Deaths under one year per 1000 births for two-year period, 1915-1916 for nativity of mother were as follows, viz.:

Nativity of mother	Proportion, primipara	Infant mortality rate	Percentage attended by midwives
United States.....	39.5	97.7	21.8
Austrian.....	27.7	89.2	75.8
Italian.....	15.1	84.3	89.2
Russian.....	25.6	70.2	48.6

Among infants born of primipara the mortality is lowest for those attended by physicians. Midwives attend 29 per cent. of the primipara but 32 per cent. of the deaths of infants under one year among primipara had been attended at birth by midwives. Physicians attended 47 per cent. of the primipara but only 43 per cent. of the deaths under one year among primipara had been attended by physicians; hospitals delivered 23 per cent. of the primipara but 24 per cent. of the deaths under one year among primipara had been delivered in hospitals.

The high infant-mortality rate of infants of mothers delivered in hospitals is further explained by the high proportion of primipara of *all* *nativities* delivered in hospitals. Of United States mothers there were delivered in hospitals 28 per cent. of the primipara and 14 per cent. of the multipara; of Russian mothers 21 per cent. of the primipara and 10 per cent. of the multipara; Austrian mothers 14 per cent. of the primipara and 2 per cent. of the multipara and of the Italian mothers 1.6 per cent. of the primipara and 6 per cent. of multipara.

It is of special interest to note here again that very few of the

Italian mothers are delivered in hospitals; that 88 per cent. are delivered by midwives; that 85 per cent. of primipara of Italian mothers are delivered by midwives and that the infant-mortality rate of babies of Italian mothers is one of the lowest of all national groups.

I have been careful to present the data in reference to primipara so that we may have all the facts before us upon which to base a proper judgment of the relation the midwife occupies to the problem of maternal and infant mortality and that we may be willing and able to pass judgment without prejudice or bias of any sort.

The results of midwifery practice in Newark may seem sufficiently favorable to permit a short statement of what has been accomplished during the past three years through the supervision of our Department.

In 1914 there were ninety-nine midwives of whom seventeen were practising without a license; thirty reported births late; twenty frequently failed to report births at all; sixteen carried instruments contrary to law, such as uterine forceps, hypodermic syringes, hard rubber catheters, specula; nine carried drugs such as laudanum, strychnine, arsenic; seventy admitted that they did not send for a physician when presented with slight abnormalities during pregnancy or labor; twenty admitted that they did not use silver nitrate in the eyes of the new-born; twenty-five midwives did not carry thermometers, but claimed that they were quite competent to determine the temperature by taking the pulse; thirteen were suspected of being abortionists.

It was also learned from the records that ten of the midwives delivered more than 50 per cent. of all of the midwife cases; three, delivered twenty a month; two, more than thirty cases a month; and one, delivered as many as fifty cases a month.

With these facts in hand we set about through conferences, lectures and personal visits to the midwives and to their cases to inform the midwife of what she may do under the law and how she should conduct herself and her cases to the best interests of herself and her patients.

A few contrasting figures will be sufficient to indicate what has been accomplished, and also, I suppose, what still remains to be accomplished.

In 1917 we had ninety-six practising midwives, instead of ninety-nine, of whom two are unlicensed instead of seventeen. These two midwives have been practising over twenty-five years, are of good repute and attend only a few cases each year. All midwives carry

TABLE I.—MATERNAL AND INFANT MORTALITY AMONG MOTHERS WHO RECEIVED PRENATAL SUPERVISION FROM, CHILD HYGIENE DIVISION AND WERE DELIVERED BY MIDWIVES, NEWARK, N. J., 1916.

Mothers delivered by midwives	Maternal deaths			Deaths of babies under one month			Stillbirths		
	No.	Rate	City rate	No.	Rate	City rate	No.	Rate	City rate
586	1	1.7	2.2*	5	8.5	36.4	4	6.8	41.7

\* Or 1 in every 454 mothers died in childbirth.

TABLE II.—MATERNAL DEATHS PER 1000 LIVE BIRTHS IN CERTAIN COUNTRIES, AND LARGE CITIES IN THE UNITED STATES.

Countries	Years	Death rate	Cities	Year	Death rate
Italy.....	1910-13	2.4 or 1 in 417	New York....	1916	4.6 or 1 in 217
Hungary.....	1908-11	3.6 or 1 in 277	Newark.....	1916	2.2 or 1 in 454
England and Wales.....	1910-14	3.7 or 1 in 270	Buffalo.....	1916	3.2 or 1 in 312
New Zealand..	1910-14	4.0 or 1 in 250	Detroit.....	1916	3.7 or 1 in 270
Australia.....	1910-12	5.0 or 1 in 200	St. Louis....	1916	5.2 or 1 in 192
Ireland.....	1911-14	5.2 or 1 in 192	Cleveland....	1916	5.6 or 1 in 180
Switzerland...	1909-12	5.3 or 1 in 188	Boston.....	1916	6.5 or 1 in 153
			Baltimore....	1916	6.8 or 1 in 147
			Philadelphia..	1916	7.0 or 1 in 143

Forty-nine per cent. of the births in Newark were attended by Midwives.

TABLE III.—DEATHS UNDER ONE YEAR AND UNDER ONE MONTH PER 1000 BIRTHS BY ATTENDANT AT BIRTH FOR 1915-1916, NEWARK, N. J.

Year	Attendant at birth							
	All attendants		Midwife		Physician		Hospital	
	Under 1 year	Under 1 month	Under 1 year	Under 1 month	Under 1 year	Under 1 month	Under 1 year	Under 1 month
1915	85.3	35.4	58.9	24.1	79.4	37.0	88.9	50.1
1916	89.6	38.0	82.2*	25.9	70.6	39.4	105.1	64.1
For two-year period.....	87.5	36.4	70.7	25.1	74.3	38.2	97.4	57.3

\* Epidemics of poliomyelitis, measles and influenza.



TABLE IV.—DEATHS UNDER ONE YEAR PER 1000 BIRTHS BY NATIVITY OF MOTHER FOR EACH YEAR AND THREE-YEAR PERIOD, NEWARK, 1914-1916.

Mother born in	Year											
	3-year period, 1914-1916			1916*			1915			1914		
	Births	D'ths under 1 yr.	Inf. Mort. rate	Births	D'ths under 1 yr.	Inf. Mort. rate	Births	D'ths under 1 yr.	Inf. Mort. rate	Births	D'ths under 1 yr.	Inf. Mort. rate
United States...	13,478	1,317	97.7	4,685	424	90.5	4,391	401	91.3	4,402	492	111.7
Italy.....	7,575	639	84.3	2,431	228	94.1	2,519	179	71.0	2,625	232	88.0
Austria....	4,843	432	89.2	1,783	103	57.7	1,521	126	82.8	1,539	203	131.0
Russia....	4,556	320	70.2	1,406	95	67.5	1,615	127	78.6	1,535	98	63.0
Others....	3,056	375	122.3	1,141	176	153.3	909	102	112.2	1,006	96	96.0
Total....	33,508	3,083	92.0	11,446	1,026	89.6	10,955	935	85.3	11,107	1,122	98.0

\* Epidemic of poliomyelitis, measles and influenza.

TABLE V.—PERCENTAGE DISTRIBUTION OF DEATHS UNDER ONE YEAR AND UNDER ONE MONTH FOR ATTENDANT AT BIRTH, FOR TWO-YEAR PERIOD, NEWARK, N. J., 1915-1916.

Cases studied				Attendant at birth											
				Midwife				Physician				Hospital			
Under one year		Under one month		Under one year		Under one month		Under one year		Under one month		Under one year		Under one month	
No.	% Dis.	No.	% Dis.	No.	% Dis.	No.	% Dis.	No.	% Dis.	No.	% Dis.	No.	% Dis.	No.	% Dis.
1691	100	763	100	778	46	276	36	653	38	334	44	260	16	153	20

Record shows 1961 deaths under one year, 270 attendant at birth unknown.

Record shows 826 deaths under one month, 63 attendant at birth unknown.

TABLE VI.—PERCENTAGE DISTRIBUTION OF BIRTHS FOR THREE-YEAR PERIOD BY ATTENDANT, NEWARK, N. J., 1914-1916.

Year	Attendant at birth							
	Total		Midwife		Physician		Hospital	
	Number	Percentage distribution	Number	Percentage distribution	Number	Percentage distribution	Number	Percentage distribution
1914	11,107	100	5,471	49	4,352	40	1,284	11
1915	10,955	100	5,414	49	4,243	38	1,295	12
1916	11,446	100	5,582	49	4,488	39	1,374	12
Total...	33,508	100	16,467	49	13,083	39	3,953	12

TABLE VII.—PERCENTAGE DISTRIBUTION OF DEATHS UNDER ONE YEAR BY NATIVITY OF MOTHER FOR ATTENDANT AT BIRTH, FOR TWO-YEAR PERIOD, NEWARK, N. J., 1915-1916.

Mother born in	Attendant at birth							
	Total		Midwife		Physician		Hospital	
	Number	Percentage distribution	Number	Percentage distribution	Number	Percentage distribution	Number	Percentage distribution
United States...	545	100	116	21.3	311	57.1	118	21.6
Italy....	278	100	245	88.1	25	9.0	8	2.9
Austria...	157	100	127	80.9	22	14.0	8	5.1
Russia...	128	100	69	53.9	38	29.7	21	16.4
Others...	139	100	56	40.3	51	36.6	32	23.1
Total....	1247	100	613	49.0	447	36.0	187	15.0

TABLE VIII.—PERCENTAGE DISTRIBUTION OF BIRTHS BY NATIVITY OF MOTHER FOR ATTENDANT FOR TWO-YEAR PERIOD, NEWARK, N. J., 1915-1916.

Mother born in	Births		Attendant at birth					
			Midwife		Physician		Hospital	
	Number	Percentage distribution	Number	Percentage distribution	Number	Percentage distribution	Number	Percentage distribution
United States...	9,075	100	1,984	21.8	5,368	59.2	1,723	19.0
Italy....	4,950	100	4,418	89.2	487	9.9	45	0.9
Austria...	3,304	100	2,505	75.8	603	18.3	196	5.9
Russia...	3,020	100	1,468	48.6	1,161	38.4	391	12.6
Others...	2,047	100	621	33.6	1,112	51.7	314	14.6
Total....	22,396*	100	10,996	49.1	8,731	39.0	2,669	11.9

\* Record shows 22,401 births, five births had no attendant at birth.

silver nitrate in their bags and from all reports and observations use it in the eyes of every new-born baby. Of course, it is difficult to be positive about this, but the small number of ophthalmia cases in midwifery practice seems to bear out this report. In 1916 of eighteen cases reported, midwives had been in attendance.

TABLE IX.—PERCENTAGE DISTRIBUTION OF DEATHS UNDER ONE YEAR FOR ATTENDANT AT BIRTH BY PRIMIPARA AND MULTIPARA AND NATIVITY OF MOTHER, FOR TWO-YEAR PERIOD, NEWARK, N. J., 1915-1916.

Mother born in	Deaths		Attendant at birth					
	All attendants at birth		Midwife		Physician		Hospital	
	Prim.	Mult.	Prim.	Mult.	Prim.	Mult.	Prim.	Mult.
United States...	51.4	40.7	14.0	20.0	71.0	68.8	65.9	60.8
Italy....	10.0	27.1	23.6	43.7	3.3	6.8	4.5	4.1
Austria...	16.9	10.9	41.2	16.0	5.9	4.5	4.5	4.1
Russia...	9.3	10.7	15.8	10.3	7.2	9.1	3.4	18.2
Others...	12.4	10.6	5.2	10.0	12.5	10.8	21.6	13.0
Total....	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE X.—PERCENTAGE DISTRIBUTION OF BIRTHS FOR ATTENDANT BY PRIMIPARA AND MULTIPARA AND NATIVITY OF MOTHER FOR SIX CONSECUTIVE MONTHS IN 1916, NEWARK, N. J.

Mother born in	Births all attendants		Attendant at birth					
			Midwife		Physician		Hospital	
	Prim.	Mult.	Prim.	Mult.	Prim.	Mult.	Prim.	Mult.
United States...	54.6	35.7	18	16	71	58	67	63
Italy....	11.0	26.1	31	43	3	7	1	2
Austria...	14.0	15.5	30	22	6	7	8	4
Russia...	10.2	12.7	15	12	9	13	9	17
Others...	10.2	10.0	5	6	11	15	14	13
Total....	100.0	100.0	100	100	100	100	100	100

at any time in five cases only. When we recall that they attend 50 per cent. of all the births and practice especially in the families where ophthalmia is most likely to occur, this record bears out the previous statement. The number of ophthalmia cases reported in 1916 showed a reduction of 40 per cent. over those reported in 1914 and during this period not a single case of blindness has occurred.

Our records show that about ten midwives are still disposed not

TABLE XI.—PERCENTAGE DISTRIBUTION OF DEATHS UNDER ONE YEAR FOR PRIMIPARA AND MULTIPARA BY NATIVITY OF MOTHER FOR TWO-YEAR PERIOD, NEWARK, N. J., 1915-1916.

Mother born in	Total deaths		Primipara			Multipara		
	Prim.	Mult.	Midwife	Physician	Hospital	Midwife	Physician	Hospital
United States..	33.5	66.5	8.8	59.3	31.9	27.5	56.0	16.3
Italy....	12.9	87.1	75.0	13.9	11.1	90.1	8.2	1.7
Austria..	38.2	61.8	78.3	15.0	6.7	82.5	13.3	4.1
Russia...	25.0	75.0	56.2	34.4	9.3	53.1	28.1	18.8
Others...	31.6	68.4	13.6	43.2	43.2	52.6	33.7	13.7
Total....	28.3	71.7	32.3	43.0	24.8	56.0	33.0	11.0

TABLE XII.—PERCENTAGE DISTRIBUTION OF BIRTHS FOR PRIMIPARA AND MULTIPARA BY NATIVITY OF MOTHER AND ATTENDANT AT BIRTH FOR SIX CONSECUTIVE MONTHS OF 1916, NEWARK, N. J.

Mother born in	Total births		Primipara			Multipara		
	Prim.	Mult.	Midwife	Physician	Hospital	Midwife	Physician	Hospital
United States..	39.5	60.5	10.1	61.3	28.6	24.8	61.0	14.2
Italy....	15.1	84.9	85.5	12.9	1.6	89.7	9.7	0.6
Austria..	27.7	72.3	65.1	21.0	13.9	79.5	18.1	2.4
Russia...	25.6	74.4	38.3	40.6	21.4	52.1	37.5	10.4
Others...	30.3	69.7	16.6	52.9	30.5	33.5	56.3	10.2
Total....	29.8	70.2	29.6	47.4	23.8	54.5	37.5	8.0

to call a physician promptly in abnormal cases and that seven do not carry thermometers. This, however, is an improvement over 1914 when the records showed that seventy did not send for physicians and twenty-five did not carry thermometers.

In 1917 no midwife to our knowledge carried any drug or surgical instrument, not even a soft rubber catheter. Two midwives, however, used hypodermic injections for anemia in pregnancy and to give pituitrin to hasten labor. In this, I fear, they were but following in the steps of some busy practitioners, without, however, the warrant of law.

In 1917 four licenses were revoked by the State Board of Medical



TABLE XIII.—PERCENTAGE DISTRIBUTION OF BIRTHS FOR ATTENDANT, BY NATIVITY OF MOTHER, NEWARK, N. J., FOR SIX CONSECUTIVE MONTHS IN 1916.

Mother born in	Attendant at birth							
	All attendants		Midwife		Physician		Hospital	
	Number	Percentage distribution	Number	Percentage distribution	Number	Percentage distribution	Number	Percentage distribution
United States..	2357	41	448	16.7	1441	62.4	468	66.0
Italy....	1230	22	1096	40.8	125	5.4	9	1.2
Austria..	857	15	647	24.1	162	7.0	48	6.7
Russia...	684	12	332	12.4	262	11.4	90	12.6
Others...	574	15	163	6.0	317	14.0	94	13.5
Total....	5702	100	2686	100.0	2307	100.0	709	100.0

TABLE XIV.—DEATHS UNDER ONE YEAR FOR NATIVITY OF MOTHER BY ATTENDANT AT BIRTH FOR PRIMIPARA AND MULTIPARA, FOR TWO-YEAR PERIOD, NEWARK, 1915-1916.

Mother born in	Deaths			Attendant at birth								
				Midwife			Physician			Hospital		
	Total	Prim.	Mult.	Total	Prim.	Mult.	Total	Prim.	Mult.	Total	Prim.	Mult.
United States.	545	182	363	116	16	100	311	108	203	118	58	60
Italy.....	278	36	242	245	27	218	25	5	20	8	4	4
Austria.....	157	60	97	127	47	80	22	9	13	8	4	4
Russia.....	128	32	96	69	18	51	38	11	27	21	3	18
Others.....	139	44	95	56	6	50	51	19	32	32	19	13
Total.....	1,247	354	893	613	114	499	447	152	295	187	88	99

Examiners upon our recommendation; three for malpractice and one for incompetence and neglect, though the midwife had been in practice over forty-two years, delivered over 7000 women and received a gold medal after delivering 5000 cases.

In the three years there has been considerable improvement in the reporting of births by midwives. I mention this because the prompt and complete reporting of births is essential for accurate vital statistics and effective preventive child hygiene work. In 1916, of 5414 births attended by midwives only twenty-nine were

TABLE XV.—BIRTHS FOR NATIVITY OF MOTHER BY ATTENDANT FOR PRIMIPARA AND MULTIPARA FOR SIX MONTHS OF 1916, NEWARK, N. J.

Mother born in	Births			Attendant at birth								
				Midwife			Physician			Hospital		
	Total	Prim.	Mult.	Total	Prim.	Mult.	Total	Prim.	Mult.	Total	Prim.	Mult.
United States.	2357	931	1426	448	94	354	1441	571	870	468	266	202
Italy.....	1320	187	1043	1096	160	936	123	24	101	9	3	6
Austria.....	857	238	619	647	155	492	162	50	112	48	33	15
Russia.....	684	175	509	332	67	265	262	71	191	90	37	53
Others.....	574	174	400	163	29	134	317	92	225	94	53	41
Total.....	5702	1705	3997	2686	505	2181	2307	808	1499	709	392	317

unreported; for the two-year period, of 10,996 births 262 births were reported late, or 2.4 per cent. and forty-two or 0.3 per cent. not reported, while physicians attended 8731 births and reported late 725 or 8.3 per cent. and failed to report 56 or 0.6 per cent.

When we recall the homes in which the midwife works, the housing, social and economic conditions under which her families live, I see little reason for condemnation or elimination of the midwife, or the establishment of costly hospitals to care for all maternity cases. Our experience rather justifies our faith in their usefulness under proper supervision and coöperation.

## MIDWIFERY AND OPHTHALMIA NEONATORUM.

Among the 4000 babies supervised by the Child Hygiene Division of Newark, N. J. during 1915 and 1916 and attended by midwives, our nurses discovered sixty cases of purulent discharge of the eyes, not reported by the midwives attending these cases; of these only seven were found to show gonococcus. We consider this ample proof that midwives use silver nitrate practically in all their cases and have failed to call physicians only in very rare instances.

TABLE XVI.—OPHTHALMIA NEONATORUM 1915-1916, NEWARK, N. J.

Total births	Ophthalmia cases reported		Attendant at birth								
			Midwife			Physician			Hospital		
			Births attended		Ophthalmia cases	Births attended		Ophthalmia cases	Births attended		Ophthalmia cases
	Total	Rate	Total	Total		Total	Total		Total	Total	
22,401	27	100	10,996	10	0.9	8,731	12	1.3	2,669	5	1.8

## PREËCLAMPTIC CESAREAN SECTION.\*

BY

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IN looking back over an experience of over thirty years of general and consulting practice, I can recall no class of cases where the results have been, as a rule, so unsatisfactory as those of puerperal eclampsia. Until quite recently, it was generally considered that we had a kidney condition to contend with, and the terms "pregnancy nephritis," "albuminuria of pregnancy," or the "kidney of pregnancy," were in general use. We were led to believe that the phenomena, such as eclampsia, coma, and dropsy were similar to those caused by uremia, which was produced in some manner by the pregnant state.

At the present time, we know that we have a far different condition to deal with:—a toxemia, produced by the presence in the blood in a certain percentage of pregnant women, of some toxic substance which affects seriously the function of all the organs. Although our better knowledge of the pathology of the condition causing eclampsia, has brought about some improvement in the results of our treatment, there is still much to be expected.

Late reports give the maternal mortality of eclampsia as 15 per cent. and the infantile mortality from 40–60 per cent. This is an improvement, but still too high a mortality. As statistics usually come from the larger maternity hospitals, where the best facilities are to be found for care and treatment, they are undoubtedly better than would be found if gathered from all sources. What can be done to lower this high mortality rate, both maternal and infantile?

In the first place, educate these expectant mothers, impress upon them the importance of keeping in touch with their physician, establish prenatal clinics, where the poorer patients can be watched and advised. The District Nurse system is already doing much of this work even in the rural districts. There are comparatively few of these toxemic patients, if the trouble is detected early, who cannot be carried safely through or, at least into the later months of pregnancy when the child is viable. We should strive to give these mothers with their unborn babes at least as good a chance

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as we give patients afflicted with tuberculosis or cancer, for they are practically all curable.

When a patient at, or near term, in spite of all means of elimination, shows by nervousness, sleeplessness, severe headaches, high blood pressure, edema, and excessive albuminuria that convulsions are imminent, why wait until the patient has become eclamptic? In many cases the patient is unconscious, and the child as toxic as the mother; if it survives delivery, it succumbs in a few hours, or a day or two at best. It is right here that we are confronted by the question, what shall we do? What is the best procedure to save both mother and child? How long is it safe for us to wait for, and to depend upon our efforts to combat the toxemia by means of laxatives, sedatives, hot packs, bleeding, etc.? The safety of both mother and child now depends upon the emptying of the uterus as rapidly as possible. I do not believe that any rule of procedure can be laid down that will apply to all classes of cases.

In women who have borne one or more children, where labor has safely begun, and the cervix thinned out, delivery may be easily and rapidly accomplished by means of rubber bags and manual dilatation, under ether. This is the class of cases which I believe may be greatly facilitated by vaginal hysterotomy. But a large majority, 75 per cent., or more, of eclamptic women are primigravidæ, many of them with rigid elongated cervixes. In these cases delivery by rapid dilatation, either with rubber bags, by manual manipulation, or even by hysterotomy, is a difficult task of sometimes many hours' duration and may, in spite of our utmost care, be fraught with danger to the child and, through toxemia and infection, to the mother. In these cases Cesarean section offers by far the best results.

I know that almost every writer on this subject has criticized this procedure, deprecating the frequency of Cesarean section in eclampsia, advising that in most cases it is better to employ some of the other methods, leaving Cesarean section as a later resort. I have had some experience in these later-resort cases, and my results have not been good.

In studying the literature, I have not found any reports that have been satisfactory. It is not reasonable to expect favorable results because we must always remember that the longer the convulsions continue, the greater the mortality both to mother and child. The first convulsion is the real danger signal. The toxemia does not become a real menace to the life of either until the stage of convulsions has begun. The longer the convulsions continue, the more rapidly toxemic both mother and child become.



During the past three years I have adopted the plan of operating upon this class of patients, when I have become convinced that convulsions were imminent; in some cases at the onset of labor, and in others before labor had begun. I do not expect that my experience has been extensive enough during this time to be reckoned with that of any of the large maternity institutions. Together with my associate, Dr. C. J. McCambridge, I have treated twelve cases of pregnancy toxemia since 1914. Of these, seven were treated by preëclamptic Cesarean section. Of these seven cases, the seven mothers and eight children survived, one mother having twins. The other five cases were patients to whom I was called late, after they had been some time in convulsions. Of these seven mothers, six were primigravidæ, and one multipara, third child. Two were operated upon after labor had begun, five before the beginning of labor. Three had general edema. Two were suffering from mental dullness, one of them being semi-comatose. One had been suffering for sometime previous to her pregnancy from chronic nephritis. One patient had a serious mitral murmur. One was complicated by a goiter and active hyperthyroidism. Two had postpartum convulsions, one having two convulsions, and the other one convulsion, which were easily controlled. Of the other five cases, two were treated by Cesarean section, of which one mother, and no children, survived, two by vaginal hysterotomy, in which both mothers and one child survived. The fifth, brought to us from a distance, was about the sixth month of pregnancy, and had suffered many convulsions. All operative procedure was positively refused until it was too late to do anything to save even the mother, who died of extreme exhaustion and toxemia. Of the two late Cesarean sections, one patient was brought to the hospital in a comatose condition after having been in convulsions for several hours. As I did not believe she could possibly survive the process of a slow dilatation and delivery, she was operated upon at once and delivered of a living child. Her convalescence was slow, the coma lasting for about three days. She suffered several severe postpartum convulsions, which were controlled by morphine, chloral, veratrum viride, and hot wet packs.

In my early training I was taught to depend upon veratrum viride in all cases of puerperal eclampsia, and I still have confidence in it, for controlling convulsions, but that confidence is greater in postpartum convulsions when the uterus is empty and the cause of the toxemia has been removed, and that we have a chance of eliminating the toxins faster than they are being manufactured.

The other late Cesarean section was performed on a very fat

primipara, who had been twenty hours in convulsions and labor. She was extremely toxic, very edematous, and semicomatose. She had been in labor for nearly twenty-four hours, but had made no appreciable progress. The cervix was thick and infiltrated, as was also the vulva and vaginal outlet. She was delivered by Cesarean section of a large living child which, however, was too toxic to survive. I found the uterine wall thick and flabby from infiltration, and although she was given pituitrin freely, as soon as the uterus had been emptied, there was scarcely any contraction of the uterine muscle. She suffered a severe postpartum hemorrhage, the first I have seen in fifty-one Cesarean operations. The patient developed an acute dilatation of the stomach, and altogether experienced a very stormy convalescence; but, finally, made a good recovery. I cite these two cases as fair examples of late Cesarean section.

I am satisfied that if this patient had been operated upon twenty-four or even forty-eight hours earlier, before the onset of convulsions, she would have been spared the desperate fight she had for her life, and would also have been spared her child.

It has frequently been said as an argument against Cesarean section, that the toxemia cannot be so easily treated after delivery, owing to the abdominal wound. I have never experienced any difficulty from this source. I have never hesitated to put my patient in the hot wet pack, and I have never had any unpleasant results. The wound is small and can be easily protected. In cases of early operation, there is usually very little trouble afterward. The cause is removed, the resistance is good, and convulsions rarely occur. The toxic symptoms rapidly disappear, and convalescence is rapid and normal.

That there is a certain amount of shock to the patient from the operation cannot be denied, but it is negligible as compared with the amount of the shock produced by repeated convulsions, or even that produced by the protracted administration of anesthetics, which is necessary to prevent the constant recurrence of convulsions.

Chloroform, which up to a few years ago was universally used, has been proven to add to the effects of the existing toxemia; and ether, when its administration is prolonged, if it does not add to the toxic condition, I believe tends to weaken the resistance in both patients, so that when the labor is finally terminated mother and child are so exhausted that they are too feeble and too toxic to respond. We are frequently told that the maternal mortality is lowest where there is the least operative interference. Twenty-five years ago we were told the same thing about appendicitis.

I have no patience with these men; they tell us that we should

allow nature to take its course, and interfere only when everything is going bad with the patient; then they give us, as a result of this method, a maternal mortality rate four or five times as high, and an infant mortality rate eight to ten times as high, as can be obtained by early Cesarean section. Personally, I believe that we should never allow a severe præclamptic toxemia case to suffer hard or prolonged labor pains, for there is no doubt that they rapidly increase the toxemic condition, and produce toxic congestion and edema in the liver, spleen, kidneys, and brain, with resultant convulsions and coma. On the other hand if præclamptic Cesarean section be done with ether or gas-ether anesthesia, of fifteen to thirty minutes, there is practically just as good a chance for the mother as there would have been had no toxemia existed, for the toxin is rapidly eliminated and recovery is normal.

It is also constantly pointed out that the scar of a Cesarean section is likely to weaken the uterine wall and subject the patient to the danger of a possible rupture of the uterus in any subsequent labor. This cannot be denied; but which is the greater of the two evils? One is a very present and very grave danger, the other is a remote and improbable one. I have seen but two ruptured uteri, and in neither of them was a previous Cesarean section the cause. I am inclined to believe that the danger from rupture of a section scar has been very much overrated—at least so much so, that it should not be considered against the much graver danger of puerperal eclampsia.

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## THE CONSERVATIVE TREATMENT OF ECLAMPSIA.\*

BY

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THE radical operative methods almost universally in vogue for the treatment of that form of obstetrical toxemia accompanied by convulsions ordinarily spoken of as eclampsia, have been accepted and practiced so consistently by the majority of obstetricians throughout the world, that in order to bring forward any sort of treatment savoring of conservatism, the suggestor is of necessity placed in a position to have showered down upon his head a storm of adverse criticism and disbelief, unless he can offer the strongest proof for his assertions, backed by evidence which is indisputable.

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Sporadic attempts have been made from time to time to interest physicians in what may be termed the medical treatment of the convulsive toxemias, and among them those made by our Secretary, Dr. Zinke, by one of our Fellows, Dr. Leighton, the reports of Stroganoff, and the Rotunda Hospital, should be well known to you all and certainly ought to be illuminating. So far as the writer can discover, however, none of the preceding contributions have made much impression on the greater number of men dealing with the complication in hand, and the more spectacular methods of delivery, such as abdominal Cesarean section, the so-called vaginal Cesarean section, rapid and brutal accouchement forcé, etc., still hold the position of choice when a patient is seen suffering from a convulsive toxemia.

A thoughtful survey of the mortality statistics of patients suffering from eclampsia, taken from the reports of numerous writers both here and abroad, will show that treated by radical methods, the maternal mortality approaches an average of from 25 per cent. to 30 per cent., these figures being easily available, and that the fetal mortality averages from 40 per cent. to 50 per cent., surely a frightful complication, the etiology of which no one knows, a fact most constantly impressed upon me by reading the numerous dissertations of various authors on their experimental work. A striking contrast to these figures is seen in the report of the last 15,774 cases delivered at Sloane Maternity Hospital, where under reasonably conservative treatment, the maternal mortality was reduced to 14.5 per cent. with a corresponding reduction in the still-birth rate. In the previous 2000 deliveries at the same institution, the maternal mortality was 28.3 per cent., with a fetal mortality of 60.15 per cent.(1).

Far be it from the writer's intention to convey the impression that he minimizes the value of the efforts of the experimental investigators, realizing to the uttermost that only through such investigation will the problem finally be solved, as solved it will be, but at present we are too apt to present dicta and methods of operation for a condition the actual etiology of which we know little or nothing.

Struck with the results of radical treatment (the bad results) and, at the same time, impressed with the good results of the writers already quoted, and feeling that in spite of their heresy they could not *all* be *entirely* wrong, the writer began about two years ago to employ the treatment, later to be described, and published the results last January in the Bulletin of the Lying-In Hospital, as a preliminary report(2). Since that time the number of cases



has increased and the figures herewith presented represent, without any attempt at discrimination, the actual results in cases of true convulsive toxemia.

As this article is supposed to deal with treatment of an acknowledged fact, and not with theory, discussions of etiology, etc., will be omitted, and it will be assumed that it is understood that all of the reported cases were pregnant or recently so; that they all had had one or more convulsions and represented true obstetrical toxemias.

Immediately on entrance to the hospital, the patient's blood pressure is taken, a catheterized specimen of urine secured, and she is put into an isolation room which is darkened and as much quiet as possible obtained. She is then given by hypodermatic injection,  $\frac{1}{2}$  grain morphine sulphate, her stomach is washed out, 2 ounces of castor oil is poured down the tube at the end of the lavage, and she is given a colonic irrigation of 5 gallons of 5 per cent. glucose solution.

If the blood pressure is over 175 systolic, phlebotomy is done, and a sufficient quantity of blood is extracted to bring the pressure down to 150; normal saline is not injected. In the opinion of the writer, it is unwise to bleed the patient if the pressure is lower than 175 systolic, as if, for any reason, a good deal of blood is lost during the delivery, the pressure will be reduced so low that the patient may die from shock. This same objection applies to the antepartum administration of large doses of *veratrum viride*.

The patient is now kept quiet and  $\frac{1}{4}$  grain morphine administered every hour until the respirations drop to eight per minute. At this time convulsions have usually ceased, the patient will have fallen into labor, and, as has happened in practically all of our cases, will be delivered normally or by an easy low forceps in a short time. Occasionally, the use of a little ether is necessary to control the convulsions while waiting for the effect of the morphine. The convalescence is treated in the usual manner, as indicated by the symptoms, and has been in our patients significantly uncomplicated.

The series now includes fifty-five true convulsive toxemias. Of these fifty-five, seven mothers died, showing a gross maternal mortality of 12.7 per cent. Two of these mothers, however, died before treatment of any sort could be administered, one arriving postpartum at the hospital and dying before anything could be done for her, the other dying of cerebral embolus while apparently in good condition and after having had but one convulsion. In these two cases no form of treatment whatever would have been successful, so that in a comparative estimate of methods of treatment, such as this paper

purports to be, it is fair to exclude these two patients. This, then, leaves a corrected mortality of five mothers out of fifty-five patients treated in the manner already outlined, or, in other words, a mortality of approximately 9 per cent.

In our first cases referred to above, the maternal mortality was 8.5 per cent., so that the ratio holds about the same. The number of children still-born in the series was 19 per cent. or 34 per cent., which is a considerable reduction over the best figures quoted. Practically all of these were very premature or macerated and, as in the writer's first report, in no case which was at term and in which a fetal heart was heard on entrance, did morphine, although sometimes used in enormous quantities, seem to make any difference in regard to the viability of the child.

This is interesting because at the time when scopolamin-morphine amnesia was first in the lime light before the medical public, we heard so much talk about the dangers of scopolamin-morphine amnesia, due to the fact that morphine was used. Inasmuch as the scopolamin-morphine amnesia patients never got more than  $\frac{1}{6}$  of a grain, and that early in labor, whereas the toxemia patients frequently get 3 or 4 grains during the course of their treatment, it seems unnecessary to comment further on this point.

To conclude, the writer desires to say that he does not wish the Association to regard this report as anything more than the results of the clinical observation of a special method in treating a fairly large number of cases of a complication which taxes all the resources of the most skilled obstetrician. He has tried in the past all of the other methods recommended, and due largely to his training and to surrounding opinion, has until recently felt that radical operation was the method par excellence for treating eclampsia and has so expressed himself in print many times. It is, however, a narrow-minded man who cannot admit being wrong and in taking up the present method truly "I came to scoff and remained to pray," so that after watching with great care the effects of this treatment in the above cases, I feel that a real contribution to obstetrical progress has been made, and that if we can persuade the average obstetrician to turn, for once, from his surgical tendencies and return to some of the tenets of his medical forbears, the future of the complication in hand will be vastly better assured. Operations such as abdominal Cesarean section have, I believe, absolutely no place in the treatment of convulsive toxemia of pregnancy, except in the cases where the eclampsia is accompanied by a deformed pelvis or some severe disproportion between the mother and child. The maternal mortality of eclampsia treated by abdominal Cesarean section, where

the operation was done purely for the toxemic condition, is about 25 per cent. (3), which is, as will be seen, nearly three times as great as the mortality in this series reported. The stillbirth mortality in a condition where the reason for the death of the child is largely prematurity, with the accompanying fetal toxemia, will not be much changed by an abdominal section.

From a confirmed radical, the writer has changed to what some may call overconservative, but he is convinced that if any of those present will give careful and thoughtful treatment along the lines suggested to their patients suffering from the convulsive toxemia of pregnancy, that both they as well as the patients will ultimately be much gratified with the end results.

20 WEST FIFTIETH STREET.

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## THE TOXEMIAS OF PREGNANCY AND THEIR TREATMENT.\*

BY

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THE treatment of toxemia of pregnancy and the puerperal state has to do with the management of a symptom-complex, about the origin and cause of which very little is as yet definitely known. The explosion termed eclampsia is but one phase or expression of this toxemia. The time to treat eclampsia is before it occurs. All admit that only in connection with pregnancy do we ever observe a train of symptoms and pathological changes which are similar to it. Clinically, the toxemic patients group themselves rather definitely under three classifications:

*First.*—The nausea and vomiting of early pregnancy, varying in degree of intensity from the mild forms up to that which is known as pernicious vomiting of pregnancy.

*Second.*—The condition known as eclampsia with or without convulsions.

*Third.*—The patients who suffer from chronic nephritis become pregnant, and, because of the added demands of pregnancy, light up an exacerbation of their nephritis and develop uremic convulsions

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and coma; or, they may also have, in combination with their nephritis, toxemia of pregnancy.

A few women apparently enjoy better health and a sense of well-being when pregnant than at any other time. They never experience nausea or vomiting.

The majority of women who become pregnant begin to have nausea and vomiting soon after conception occurs. This may be only transitory nausea in the morning or at some other hour in the day, or it may be so slight that it is noticed only several times a week. Others suffer from an attack of nausea and vomiting early in the morning, some late in the day, but near the same hour daily, and are free from it the remainder of the twenty-four hours, while others are more or less wretched throughout the entire day because of nausea and vomiting or simply nausea. Usually, by the end of the fourth month, this has largely disappeared, or the patient has become adjusted to it, so that little discomfort is experienced thereafter. Some women believe that they are able to distinguish a change in the character of the nausea and vomiting from month to month after what would have been a menstrual period.

It is our belief that all of these women suffer from a mild form of intoxication which differs only in degree of intensity and, possibly, the ability of a given individual to withstand it, from that which produces the so-called pernicious vomiting of pregnancy. This severe form merges gradually from that of a milder degree. It is rarely seen before the second month of gestation and it has usually terminated by the end of the fifth month, either by cessation under treatment, by the termination of the pregnancy by operation, or by the death of the patient with or without curettage. If by treatment, or by the elapsed time, the nausea and vomiting are brought under control, these patients gain and go on to full term without further danger or discomfort from this source. Very rarely we see this condition continuing until labor begins spontaneously, at or near full term. Where this occurs, we have always noted other decided accompanying changes: marked enlargement and tenderness of the liver, bronzing of the entire skin, moderate jaundice in the whites of the eyes, and concentrated bile-colored urine, without evidences of marked renal changes. In one patient the skin was of a dirty green color. In others, the picture of renal disturbance is the predominant one. A fair quantity of urine is excreted which contains a large amount of albumin, hyaline and granular casts, excess of indican, with low total urea output, and with diacetic and oxybutyric acid and acetone. A colitis in excess of what we



expect to find, due to repeated colonic irrigation, is present. Convulsions do not occur.

The clinical picture of pernicious vomiting of early pregnancy is similar in all cases. The patient is three or four months pregnant and has the appearance of being very ill. She gives the history of intense nausea and vomiting, which condition has lasted for several weeks with decreased ability to retain food or drink. There has been a noticeable loss of weight and strength. The tongue is dry and thickly coated. Thirst is a prominent and distressing symptom, with preference for acid drinks. Everything is vomited as soon as it is taken into the stomach. In the absence of food and drink, a green, very acid, fluid, full of ropy mucus, and in severe cases containing coffee-ground material, is thrown up. The pulse is of small volume and of low pressure. Urine analysis shows only minor renal disturbance, except evidence of well-marked acidosis, due to the withdrawal of fluids and starvation.

*Treatment.*—In the milder forms the treatment is palliative. Rest and quiet and the recumbent posture are advised during the period of nausea. Food in small quantities and at short intervals is taken during the time when nausea is absent. There should be an avoidance of acids and food that are known to disagree with the patient. Constipation is overcome by mild laxatives and alkaline digestive tonics. The rhubarb and soda mixture, with tincture of nux vomica, is a fair example. Plenty of fluid should be taken, preferably milk. Warm baths are valuable as sedatives and to keep the skin in condition to do its share in throwing off waste products.

In the severer forms, the patient should be in a hospital and constantly in bed; stomach lavage with bicarbonate of soda solution as soon as the patient is admitted and a colonic irrigation with bicarbonate of soda solution. Thereafter nothing is taken by mouth. The distressing thirst is overcome by rinsing the mouth with soda bicarbonate water, and by colonic irrigation of the same. Nutrition is entirely by rectum at first. An irrigation with soda solution is given one-half hour before each nutrient enema. This enema should be of small volume; one egg and milk enough to make 4 ounces, all completely peptonized. Three, and in some cases, four of these enemas will be tolerated in twenty-four hours. This can be continued for weeks as the only nutrition sustaining life. By this plan more available nutrition than the patient has had for a long time, is taken. In a few cases the rectum becomes irritated and intolerant. This can be overcome by the addition of 10 drops of camphorated tincture of opium to each enema for a few

times. Small repeated doses of codeine or morphine help the patient to rest. As the vomiting diminishes or ceases,  $\frac{1}{2}$ -ounce doses of peptonized milk are given every four hours by mouth. This is a quantity too small to be expelled. If tolerated, it can gradually be increased, taking the place of one and soon of another of the nutrient enemas. Repeated stomach lavage is not helpful. Occasionally to allay the thirst, a large drink of bicarbonate of soda water is allowed, with the full knowledge that it will soon be vomited. It is a form of stomach lavage less distressing than that given by a tube.

We are well aware that this is empirical treatment which does not, with our knowledge, strike directly at the cause of the trouble, but by its use a considerable number of patients will recover and continue well throughout the remainder of pregnancy. There are other patients who show no improvement under this plan. They appear very ill; the vomiting is not checked. In such cases, after twenty-four hours of treatment and observation, without improvement we empty the uterus quickly with as little shock and loss of blood as possible. This makes no decided impression on the condition of these patients. They had every appearance of not being able to live much longer, and whether pregnancy is terminated or not, they continue on their course and soon die. The patients who recover, after pregnancy is interrupted, do so very gradually. In eclamptic patients, in whom pregnancy is terminated, a rapid course is followed. They either die quickly or soon recover. Those who recover are, as a rule, well on their way within forty-eight hours.

These severe forms of vomiting of pregnancy have come under our care late, after they have been very ill for several weeks without medical care or under the care of a general practitioner in their homes where they were under very little control. They should have hospital care earlier, and, if need be, pregnancy should be interrupted earlier. The life of the fetus parasite should in no instance be allowed to weigh against that of a mature maternal life. The condition may not recur in the event of another pregnancy. In other cases it occurs in each pregnancy, but with different intensity.

One private patient during the early part of her first pregnancy suffered from this intoxication. After being in bed and under treatment for six weeks, in the country, she gradually recovered her good health. She came to New York and was delivered by us. Her labor and puerperium were normal, and her subsequent health for four years was good until she became pregnant a second time. Soon obstinate nausea and vomiting began with increasing intensity. She was under our care from the first, much of the time in the hospital.

Pregnancy was interrupted a week before her death. Because she had recovered during her first pregnancy, and was anxious to have another child, consent for an earlier abortion could not be obtained. The plan of treatment outlined above was carefully followed. Thyroid extract was given, also large quantities of human blood serum taken from pregnant and puerperal women were used. Oxygen inhalation was employed. Special nurses were in constant attendance. In so far as we could see, the treatment in no way modified the course of the disease. For twenty-four hours prior to death, there was almost complete suppression of urine and absolute blindness from retinal hemorrhages. There was no jaundice or edema. Disturbance of vision is not often seen in these cases.

A number of years ago, a ward patient's pregnancy had been interrupted because of nausea and vomiting. To all appearances, her life was in a very unstable balance. During two or three days thereafter, Dr. J. E. Welch, at that time pathologist at the Lying-In Hospital, injected under her skin the serum from 8 liters of blood donated by male and female friends and members of her family. When this treatment began, the patient's condition ceased to grow worse, her improvement, however, was very gradual, although she ultimately recovered. Dr. Welch did not regard this treatment as specific, but rather that the serum furnished easily available nutrition until other foods could be appropriated.

It is proper to note that a few years ago, it was quite the fashion to give thyroid extract for nausea and vomiting of pregnancy. For a time brilliant results were reported. In many cases this agent produced no appreciable result. Of late very little is heard of its use. Rather recently Dr. J. C. Hirst(1) has employed soluble corpus luteum powder in twenty-five consecutive cases of nausea and vomiting of early pregnancy with success in twenty-one of the cases. This plan has all the appearance of being very near the mark of rational direct treatment. It remains for its further use and time to demonstrate whether this is true or not.

Dr. A. Y. P. Garnette(2) reports two typical cases of pernicious vomiting of pregnancy which he treated by transfusion of carefully tested human blood, taken from postpartum women. In the first case, he used only one transfusion of 250 c.c. The second case was transfused twice with an interval of ten days. She was given 250 c.c. the first time, 200 c.c. the second. He reports results as decided and brilliant in both cases as those seen after transfusion for shock and acute anemia after hemorrhage. If these results can be main-

tained in other cases, he has offered us a very valuable contribution for the treatment of this type of patient. The suggestion arises that this may be a successful way to treat eclamptic patients.

It is logical to use blood from a recently pregnant woman. Whether this is essential, or whether blood from a male or from a nonpregnant donor can be used, remains to be determined.

#### ECLAMPTIC AND UREMIC TYPES.

It is difficult to distinguish between these two classes of cases. In the uremic patient a history of nephritis may be obtainable. In some cases, the ophthalmoscope will show scars of old retinal hemorrhages or other evidences of retinitis. The subsequent course in a given patient may indicate to which class she belongs. The treatment of these cases is the same except that prompt delivery of the uremic patient is more urgent in order to safeguard her eyesight. We rarely see permanent injury of the eyes in true eclampsia. Hazy vision, spots before the eyes, even total loss of vision occurs. Repeated ophthalmoscopic examinations in a large number of eclamptic and preëclamptic patients have never revealed anything but congestion and edema as the cause. Prompt and complete recovery of vision has invariably followed the delivery of the patients who have lived. One patient, six and a half months' pregnant, had one convulsion, regained consciousness, and was totally blind. She was delivered an hour later by vaginal hysterotomy, and four hours later had regained clear vision.

The manifestations of toxemia in late pregnancy vary within very wide limits as to the degree of intensity, mode of expression and manner of attack. As a rule, the onset is gradual. That is, if these patients are under careful observation, indications of toxemia will usually appear. This is not always true. There have been a few cases where examination and urinalysis has been made shortly before a convulsion. The urine showed no abnormality until after the convulsion. Then it showed the characteristic changes. In some cases, the onset is very sudden. One young primipara in the tenements was in her usual good health as far as could be learned. She was near full term. At 7.00 A. M. she was out marketing. At 9.00 A. M. of the same day, she was dead from eclampsia. Similar cases are not uncommon.

Convulsions in the case of a pregnant woman are usually considered an essential in making a diagnosis of eclampsia. This is not wholly true. We occasionally see cases with all the other manifestations of toxemia except the convulsions. In one case we found deep coma; total blindness had been present more than twelve hours;



there was moderate edema, almost complete suppression of urine, the small quantity obtained was thick, bile stained, boiled, soiled with albumin, and had many granular and hyaline casts. No convulsion had occurred at any time. Prompt and complete recovery followed delivery and treatment. Convulsions, while alarming and probably dangerous, do not form a reliable indication of the severity of an attack of toxemia. It may be that which would cause convulsions in one case would not do so in another. We recall three cases where each one had many convulsions and yet recovered. One had 100, another 43, and another had 37. In contrast to these, we had a primipara in the wards being treated for toxemia of late pregnancy. She was near full term. She had been under treatment for about a week. Apparently she had made great improvement and was doing well. Suddenly she had a convulsion and did not regain consciousness. She was sent to the operating room in an undoubtedly dying condition, and delivered by Cesarean section of vigorous well-developed twins which lived, but the mother was dead within an hour and a half from the time that she was supposed to be safe and doing well, and after only one convulsion. We do not think that operation shortened her life.

Toxemia is liable to occur in subsequent pregnancies, but it does not do so in all cases. Seven of our eclampsia patients occurring in the last six years illustrate this. All were primipara. Five were delivered by abdominal Cesarean section, two by vaginal hysterotomy. None were at full term nor in labor. All of the mothers and three of the children survived. The other three children were not viable. One of these patients was a chronic nephritic with uremic convulsions. She was about seven months' pregnant. Her child was stillborn but not macerated. We have not seen a macerated fetus and eclampsia in the same case. This patient has been delivered twice since in our service, at full term, spontaneous easy labor with living child each time. There have been no toxemic symptoms, except that the urine showed low gravity, occasional casts and traces of albumin. Another whose pregnancy was not followed, was delivered spontaneously at full term, easy labor, of a living child, without history or evidence of toxemia. Two other Cesarean cases, which required repeated treatment in the hospital for periods of ten days to two weeks during their second pregnancies, were in good condition for several weeks prior to full term and were delivered by unassisted labor of healthy children. One of these patients has since been delivered a second time by normal labor. Toxemic symptoms were in evidence during this pregnancy, but by former experience, and under frequent advice, she was able to keep the

toxemia in abeyance while remaining at home. The fifth case had a contracted pelvis and was delivered three times by Cesarean section. In 1911 the first child lived. She was lost trace of until 1914, when she was brought in an ambulance seven months' pregnant, in coma and repeated convulsions. The child did not live. In 1915 she again became pregnant and was under our close observation and management from early pregnancy. During midpregnancy she was in the hospital twice for a few days and the mild symptoms of toxemia were eliminated. She continued well up to full term, the last three weeks of which were spent in the hospital. During this time her color was good, she was in good spirits and by repeated observations no sign of toxemia was found. Her diet was milk, eggs and cereals. She was at full term, when one afternoon at 5.00 P. M., slight labor pains were observed. She stated that her lunch at 12.30 that day had been only milk and crackers, and that no other food had been taken by her since. She was prepared for immediate Cesarean section. She was obstreperous when partly under ether and vomited large quantities of partly digested food in which representative articles from the regular ward diet were recognized. This food had been given her by other ward patients. Her child lived. She promptly developed inspiration pneumonia, and died on the seventh day. Soon after her return from the operating room, a right-sided hemiplegia was noticed which continued until the end. It is possible that she really had a convulsion while taking ether. It was not recognized as such at the time. The two patients delivered by vaginal hysterotomy at about six months were in private rooms at the same time. They were apparently intensely poisoned, but made good recoveries. In February, 1915, within a few days of each other, they were delivered at full term of healthy infants, after unassisted labor in the Private Pavilion of the Lying-In Hospital. One showed no toxic signs during this pregnancy or thereafter. The other required treatment in her home to keep toxemia in abeyance. We are confident that this patient would again have been eclamptic had this course not been followed.

This list can be extended by the reports of other cases. All of our eclamptics are not delivered by Cesarean section. The writer has performed 359 abdominal Cesarean sections. In twenty-five instances, toxemia of pregnancy has been the indication. These twenty-five Cesareans have been done on twenty-three different women. Eight women died. Twenty-nine children were delivered; twins in two cases. One set of twins was dead when the patient was admitted. The mother lived. Nine of the twenty-nine children delivered failed to leave the hospital alive.

It is a noticeable fact that few pregnant women in private practice, under the care of skilled obstetricians, develop eclampsia. The knowledge of this fact and our own experience prompted the statement made early in this paper: "The time to treat eclampsia is before it occurs."

Eclampsia rarely occurs prior to the sixth month of pregnancy. A preëclamptic state after this date can usually be detected if the toxic patient is under careful observation. All patients who present the earlier and minor systems do not of necessity become eclamptic. On the other hand, some patients in whom no symptoms of toxemia have been elicited by careful observation and frequent tests, suddenly have convulsions. They appear as though toxic material had been stored up until the tissues of the body are surcharged with poison and then under some influence such as the pains, shock and exhaustion of labor, or sudden fright, as though a spring had been released, an explosion follows in the form of convulsions. We may not be able to assign any initial cause, except that the patient is or recently has been pregnant.

Some of the very early symptoms which have led us to increase our watchfulness in the care of women during pregnancy are, insomnia, an irritability unknown to the patient when not pregnant, lack of ability to concentrate as shown by increasing difficulty in writing a letter or reading. The urine will usually show minor changes, a trace of albumin, a few hyaline casts, excess of indican, and a diminished total urea output. Urobilin and urobilinogen may prove early indication of hepatic irritation. Dr. J. C. Litzenberg reports his findings after examining 271 women. In seventy-one nonpregnant women examined, he found, neither urobilin nor urobilinogen. In the 200 other so-called normally pregnant women, sixty-two, or 31 per cent. gave a positive reaction for both urobilin and urobilinogen. Eleven of his patients had valvular heart disease and a twelfth case had infection of the urinary tract with high fever. Discarding these twelve cases there still remained fifty patients or 25 per cent. of the 200 pregnant women examined, who had no known blood discrasia or other reason for liver irritation except pregnancy, and yet they showed urobilin and urobilinogen. Examinations of this character may prove to be an early means of detecting that the pregnant woman is diverging from the normal. Acid indigestion and constipation are frequent symptoms found in the cases suffering from minor intoxication. Epigastric pain, other than that known as heart-burn and due to acidosis, is not a common symptom in our experience in either the mild or severe forms of toxemia. When found, the pain is referred to the region

of the liver. In these cases where the liver is exposed either at operation or by autopsy macroscopic changes are at once evident.

#### TREATMENT OF THE PREËCLAMPTIC STATE.

We regard complete rest in bed as decidedly important. Absolute milk diet, not an occasional glass of milk, but from two to three quarts in twenty-four hours. Some patients cannot take milk but even these patients will do so if it is modified. They are given daily a hot bath, colonic irrigation with bicarbonate of soda solution, and a saline cathartic, preferably magnesium sulphate. Bicarbonate of soda given by mouth will reduce or entirely cure the heart-burn and acid indigestion.

This course is followed for a week or ten days. As improvement appears the patient is allowed out of bed part of the day. Gradually cereals, eggs and nonnitrogenous foods are added to her diet. We have found that a patient under this treatment may resume her accustomed course of life by the end of two weeks. The daily hot bath, mild saline catharsis, milk and cereal diet and bicarbonate of soda are continued. After several weeks it is sometimes necessary to repeat the more rigorous treatment just outlined. In patients who have already had eclampsia, this treatment has not thus far failed us in subsequent pregnancies.

#### TREATMENT OF THE ECLAMPTIC STATE.

No two eclamptic patients are exactly alike. It is our endeavor to judge each case individually. The grouping of patients must be familiar to all who are acquainted with hospital work. For many weeks we may not see a case of placenta previa and then in twenty-four hours three or four will appear. This also holds true of eclampsia. One house surgeon may see few cases of eclampsia, while another will see many. We had seven eclamptics in various stages of recovery at one time in our service. Not only this grouping as to the nature of the case, but as to the severity of the attack is noted. For a time case after case will appear, some violently ill, others less ill, but they all recover. Then with apparently like cases and under the same treatment we are forced to record a high mortality.

Some eclamptics are doomed before treatment is begun. Treatment may hasten the end in some cases. Prompt delivery and treatment in no way checks the course nor postpones the fatal issue. It may rescue the child. Such children are often premature. Inevitably they must have shared the mother's intoxication. If



delivered alive, we must look for a high mortality in the children of eclamptic mothers.

In general, as soon as an eclamptic is admitted, she is catheterized and the urine is examined. The blood pressure is taken. Stomach lavage with bicarbonate of soda solution and, with the tube is still in place, two ounces of magnesium sulphate in solution is poured in. Given in this way it will be retained and will soon clear the intestinal tract. The colon is irrigated, employing from 4 to 5 gallons of normal salt, glucose or soda solution. We prefer soda solution. The essential thing is the large quantity of fluid introduced which clears the colon and by absorption flushes the kidneys, in this way proving to be the best diuretic that we possess. If the patient is not to be delivered at once she is given a hot pack. Our endeavor is stimulate all the emunctories; to dilute and remove as much toxic material as possible. Occasionally a patient is so violent that a hot pack cannot be given. Such patients are placed in a very hot bath until relaxed and quiet. Very little internal medication is used. Chloral hydrate, sodium bromide, and morphine usually comprise the list. We have used morphine in the treatment for eclampsia for more than twenty-five years, sometimes with excellent results. In some cases the more morphine used, the wilder and more violent the patient became. We do not attempt to control the convulsions with an anesthetic. When a convulsion is about to occur the patient stops breathing and remains in this condition until the end of the same, therefore the anesthetic is not inhaled until after the convulsion has ceased. In operative deliveries we never use chloroform, but ether, and rarely gas and oxygen. Few of these patients require much anesthetic of any sort if an operation is to be performed, as they are practically anesthetized already.

The condition of some patients is such that, in our judgment, immediate delivery is imperative. In the cases where pregnancy has not advanced enough for the possibility of a viable child, we always deliver vaginally. In certain multiparæ of this class the cervix is soft and readily dilatable. These we dilate manually and deliver. This can be done if due care and plenty of time, as indicated by the clock, rather than the operator's sense of time, are employed. The tendency is, in all operators that we have observed, to perform vaginal deliveries too rapidly. It is no evidence of skill to spend fifteen to twenty minutes in forcing the cervix open and delivering the fetus and then take thirty or more minutes in repairing lacerations which might not have occurred had the whole time been employed in the process of dilatation. In some

multiparæ and in all primiparæ, eclamptics with nonviable fetuses and whom we decided should be delivered without delay, we perform vaginal hysterotomy, making an opening only large enough to bring down a foot by bimanual manipulation. Through this opening we deliver the fetus piecemeal, doing a craniotomy on the after-coming head. In these cases our sole consideration is for the mother and we plan to do as little damage to her soft tissue and leave as little chance for the formation of scars and adhesions, or nonunion, as possible.

In those cases in whom we have hope of delivering a viable child, where prompt delivery is imperative, comparatively few primiparæ are found who are not at term, not in labor and in whom the cervix is long, dense and undilatable. Such cases, even though they have ample pelvic room, we deliver by abdominal Cesarean section. Some eclamptic patients are at term and in labor or eclampsia has started premature labor. In these cases we do everything in our power to shorten labor without adding traumatism. In the primiparæ we wait for full dilation then deliver by forceps or by version. In many of the multiparæ the cervix is soft and dilatable whether they are or are not at term or in labor. If time and care enough are employed it is possible to secure full dilation without laceration. This is not true of primiparous patients. We do not employ accouchement forcè nor multiple incisions of the cervix in such cases. In other cases who do not so urgently demand delivery, we employ the Vorhees bags or pack the lower part of the uterus, the cervix and the vagina with gauze. In following this course we must remember that it will consume many hours and that the irritation is considerable to a patient who is in poor condition to endure such treatment. After delivery we continue the eliminative treatment as before indicated. We do not usually employ venesection before delivery, for we cannot tell beforehand how great the loss of blood will be during delivery. After delivery if convulsions and other symptoms continue, we do not delay in withdrawing from one to three liters of blood from the arm vein, according to size of the patient and the apparent total amount of her blood. We have seen the whole character of the cases change so promptly and decidedly in so many eclamptic patients after venesection that we are not ready to discontinue its use. We still regard it as a procedure of greatest value. Some patients who are going from one convulsion to another at short intervals with coma all the time, after venesection, have no more convulsions and the mental state clears up; others have fewer and less violent convulsions at longer intervals and then they cease altogether they regain

consciousness. We except always those cases in which, no matter what the treatment, it does not modify the condition nor in any way postpone a fatal ending.

Blood pressure, considered with other symptoms in the preëclamptic and the eclamptic patient, is of value as one of the guides. We have not arrived at a point where blood pressure of a given height, considered alone, would induce us to follow one course and another height another course. We have seen a preëclamptic very ill whose systolic pressure was 130, another fairly comfortable with a pressure of 245. Occasionally on the first or second day after delivery an eclamptic will develop edema of the lungs, with weak rapid pulse. This condition does not necessarily occur in those cases that have lost much blood during delivery or by venesection. A number of these patients have apparently been saved by prompt and repeated cardiac stimulation and local hyperemia by means of dry cupping over the lungs.

There are other toxic patients, preëclamptics, and even those who have had one or two convulsions but quickly regained consciousness and clear mentality, in whom, for one reason or another, we attempt to continue the pregnancy to allow fuller development for the fetus or hope that the patient may go into spontaneous labor. In such cases we follow the eliminative plan of treatment, with rest in bed and milk diet. Glonoin is given hypodermically in full doses at short intervals if the blood pressure is high. In some cases venesection has been done. It is well to keep in mind that we are dealing with patients who are in a very precarious condition and who require the closest observation, also that pregnancy is still present and that the source of intoxication, whatever that is, has not been removed. The best that we can hope in the present state of our knowledge of this condition, is that we may hold the intoxication in abeyance by removing some of it and diluting that which remains, until pregnancy is terminated. Before it is decided that pregnancy shall be allowed to continue in this class of cases, each one should be carefully judged as to whether it is advisable to subject these patients to continued danger. We are aware that the present trend is toward conservatism in the treatment of eclampsia. This is right and we are in sympathy with it to some extent. Some patients will go through to a safe termination. We are still confident that the danger for others is very great. We wish to place especial emphasis on this statement. In our experience some of these patients will very suddenly change from a condition of comparative safety to one of alarming danger. The patient mentioned earlier in the paper, under treatment for toxemia,



doing well, suddenly a convulsion, delivered of twins at once by Cesarean section, and dead within an hour and a half from the time that she was supposed to be doing well. Another primiparous patient was admitted at about seven and a half months with the history of one convulsion and another shortly after admission, but did not appear very ill. It was decided to treat her and allow the pregnancy to continue. This plan was followed for three or four weeks. She then went into spontaneous premature labor and was delivered of a small, weakly child which lived for a few days. It is our belief that this patient came to the hospital with congested kidneys, an acute parenchymatous nephritis, similar to that of other eclamptics, who if they live, promptly and completely recover from their nephritis after delivery. We believe that this patient left the hospital with permanently damaged, chronically diseased kidneys. Still another eclamptic was being conservatively managed without interrupting her pregnancy. Morphine was given freely, elimination was being attended to. She was in a room by herself. A nurse was in constant attendance. The patient was quiet. For a moment only the nurse's back was turned and she saw in the mirror the patient rise and jump, with lightning-like rapidity through the window to the street five stories below. These cases have occurred in our own service. They are deplorable. We doubt very much if they are peculiar in kind to this one service.

Toxemia of pregnancy with eclampsia is a condition which must have been recognized and in some way treated, since very early times. In the main, that which we now note has been seen and reported many times before. Each obstetrician has a favorite plan for the treatment of this complication, in which he becomes expert. It is advisable that each group should follow the course by which it hopes to attain the best results. Some progress has undoubtedly been made, but as yet we have not arrived at the underlying cause or causes of this disorder. We are not in a position to look with any degree of satisfaction upon nor to assume that we have under reasonable control a condition which still results in a maternal mortality of from 12 to 30 per cent. and a fetal mortality of from 20 to 50 per cent. This may be the best that we can do to-day. It should be the resolve of every investigator, clinical observer and writer upon this subject, that that which is the best to-day shall not be the best to-morrow. We may look forward with considerable hope. Ingenious theories are being evolved, linked up here and there with already established facts concerning the rôle played by the ductless glands. Some questions that naturally arise are: What are included in the group of ductless glands?



How is each gland co-related to other glands and to the system as a whole? Do they in any way supplement each other? What functions do they perform singly and collectively? When one or more of these functions diverge from normal either by overaction or by insufficient action, are we able to determine where the fault lies and to some extent correct it? It is unreasonable to believe that the rôle of the placenta and ovary can to any considerable extent, be disassociated from a very intimate relation with the harmonious working of the other ductless glands. It is still an open question whether the placenta has an internal secretion peculiar to itself, and if it has such, is entitled to be closed as a ductless gland; whether it is a reservoir for the hormones of other glands which act through it, or whether it is simply a medium for exchange of maternal and fetal blood.

42 EAST THIRTY-FIFTH STREET.

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### THE INDICATIONS FOR INTERFERENCE IN PREËCLAMPTIC TOXEMIA.\*

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OF all the dangers that threaten the pregnant woman, none is greater nor at times more sudden in its development and onset than eclampsia. Its etiology continues equally as obscure and unsettled as the treatment. Little more is known of its origin than a decade ago, and the methods of treatment swing back and forth from conservative to radical.

Convulsions have been reported without warning signs, subjective or objective, and this very phenomenon impels us to study every case in the hope that we may get some definite and reliable signal of the approach of this dread disease.

While eclampsia has been reported with low blood pressure, no albuminuria, no clinical symptoms, in over 90 per cent. of cases, careful watching will enable one to foresee the approaching danger.

The early recognition of the signs of preëclamptic toxemia is the most important duty of the obstetrician, and the early signs and

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symptoms often so closely resemble the harmless mechanical results of pressure of the large heavy uterus, indigestion or constipation, that only the careful observer will early detect the passing of the physiological into the pathological.

On my card given to every pregnancy case, she is asked to report at once any swelling of the face or feet, any nausea or vomiting that is persistent, any severe epigastric pain, persistent headache, disturbance of vision, or diminution in the quantity of urine.

In the latter months of pregnancy, some swelling of the feet and ankles is not uncommon, and the usual increase in weight makes the rings tight and changes the expression of the face; nausea and vomiting frequently accompany the encroachment of the enlarging uterus on the stomach, and heart-burn and indigestion are so common that at times it is difficult to differentiate it from the epigastric pain of toxemia, if other suspicious symptoms are present.

Until recent years chief emphasis has been placed on the study of the urine as an index of the toxemia, the quantity of urine voided, the amount of albumin, the microscopical findings, and the nitrogen output; but 10 per cent. of cases having convulsions have failed to show any albumin before the onset of the convulsions.

This has led to the recognition of two types of the disease, one with a degeneration of the kidney cells as the predominant lesion, while in the other, the liver cells are most affected with the kidney changes secondarily. In the presence of albumin, the physician should make a careful microscopical examination as the finding of casts, especially granular and epithelial, or of red blood cells indicate serious involvement of the kidney cells.

In earlier times the amount of urine voided and the amount of albumin were the chief indications for active interference with pregnancy; later the study of the percentage of urea was brought forward as an index of the toxemia. Save in an institution, accurate results are almost impossible, for the intake, as well as output, of nitrogen should be determined every few days in order to be of value, and the time required for such tests put them beyond the reach of any but the wealthy. Furthermore, Cragin reports some of his cases as showing a low-urea output throughout pregnancy, yet without symptoms of toxemia. The character and quantity of the waste products secured through urinalysis have been disappointing, and likewise chemical analysis of the blood has not shown any constant relationship to the degree of toxemia.

With the more general use of the sphygmomanometer, the study of the blood pressure during pregnancy has been more common,

and in recent literature and newest text-books, its importance is emphasized.

As early as 1897, Vasquez and Nobicourt made a study of the blood pressure of a number of eclamptics, but as yet few men take the blood pressure even in their toxic cases, let alone as a matter of routine in all pregnant women. But we are coming to recognize that the periodic observation of the blood pressure is as important as the examination of the mensuration of the pelvis.

Williams ascribes the increased arterial tension of toxemia in the eclamptic woman to a constriction of the arterioles by a vaso-constrictor property of the eclamptic toxin, with a consequent reduction of the lumen, and an increased resistance in the arterial tree.

A number of men have published the results of their observations of the blood pressure in several thousands of pregnant women. Irving found that in 80 per cent. of 5000 cases, the pressure was never below 100, nor above 130; in 9 per cent. it was below 100 one or more times; Newell places the normal limits at 100 to 130, and Hausling at 100 to 135. While excitement, exertion, digestion, rest and change of position will cause variations of ten points, the average systolic pressure is 110 to 120. Although there may be wide variations in normal individuals, a careful record from time to time throughout pregnancy is of great value in the later months, for by determining the average pressure for each case, one is better able to place the proper interpretation on any marked rise, or, what is more frequently seen, a steadily increasing rise.

That eclampsia may occur with a normal or even a low blood pressure is shown by the history of numerous cases by careful observers, but such cases, just as those with little or no albumin are rare, are probably of hepatic origin.

Bailey, from a study of his cases, concluded that convulsions usually occur when the blood pressure reaches 200, but may occur when it is as low as 155. Where a record is kept in the early months, if the earlier levels have been low, a steadily increasing rise to 140 or 150 would be as significant as a rise from 120 to 160, and in both a thorough investigation of all the body functions should be instituted and measures taken to combat the beginning toxemia.'

From the above, it can be seen that no arbitrary point can be set as the danger point, but in the majority of cases, where the average pressure has been 120 to 130, dangerous toxemia would be indicated by a pressure of 150.

The relation between toxemia and increased blood pressure is

well shown in the following statistics given by Irving: In cases with a blood pressure of 130 to 140, one in thirty-two developed toxemia; with a pressure of 140 to 150, one in eleven; with blood pressure of 150 to 160, one in three; and of those with a pressure of 160 to 180, one-half became toxic, while every case with a blood pressure over 180 had toxemia.

Elevated blood pressure alone is a more frequent early sign of toxemia than albuminuria alone, and Irving reports it as the first symptom twice as often as albuminuria, when it is not found coincident with the albuminuria. Furthermore, the blood pressure is not proportional to the amount of albumin, as is proven by Lynch and Green's figures. They report two cases having 1 per cent. of albumin, with a blood pressure of 130 and 210, respectively; others with 0.25 to 0.5 per cent. albumin, with blood pressure of 190 and 140, respectively; while another with but a trace of albumin had a blood pressure of 160.

As to when we are justified in terminating a pregnancy, we believe that when a patient with a blood pressure which has gradually gone up from 150 to 170, in spite of proper diet, rest and eliminative treatment, and this is accompanied by one or more other toxic symptoms, whether the amount of albumin is large or not, the time for expectant waiting is ended. A fluctuating high blood pressure in toxemia is also of serious import, as it indicates a marked derangement of the cardiovascular mechanism. One cannot but conclude that the systolic blood pressure, taken throughout pregnancy, not only often gives us warning of a beginning toxemia, but is a reliable index of the seriousness of the condition.

While all writers on obstetrics speak of visual disturbances, such as blurring of the vision, spots or black specks before the eyes, or even blindness, as symptoms of a toxemia, one finds that few men doing obstetrical work fully appreciate the importance of such eye symptoms, either from the standpoint of the patient's future vision, or as an index of the degree of the toxemia.

Cragin states that "visual disturbances in pregnancy always suggest a toxemia and indicate an examination of the urine;" and Posey and Hirst believe "that optic neuritis and retinitis may indicate the basal trouble even before changes show in the urine." De Lee advises that "acute amblyopia or amaurosis demands immediate urinalysis, and if albumin or other signs of renal or hepatic insufficiency are present, labor should be induced."

There is but little found in the literature on the early changes in the retina in these cases with beginning toxemia, for the oculist or-



dinarily does not see them in the early stage, but rather after all the damage has been done, usually months after childbirth, when the patient finds that her vision is not as good as it formerly was.

The toxins circulating in the blood give rise to a retinitis, the first symptom being edema, later there is infiltration, then degeneration, with hemorrhages, or perhaps detachment of the retina. The degree of interference with the sight depends to some extent on the location of the lesion, whether it is in the macula or within the field of vision.

Retinal hemorrhages indicate a grave toxemia, which not only threatens the patient's vision, but her life, and it should be our aim as obstetricians not only to try and save the mother's life, but we should conserve her sight, and to this end, we should aim to recognize the eye condition in the early stages before the damage is beyond repair.

With a view of finding some additional index of the severity of the toxemia in cases of threatened eclampsia, I have recently had cases showing the slightest evidence of toxemia, examined by a competent ophthalmologist, and though few in number, the findings were so uniform and suggestive that I deem them worthy of report. Through the courtesy of Dr. W. H. Snyder I am able to submit his findings together with some comments, as follows:

"The three cases referred to me constitute a fair example of this type of case. In each of these there was a recognition of blurred vision, black specks, or flashes of light. In each there was a small amount of albumin. The highest blood pressure of the three was 190, systolic. The vision was not noticeably reduced, ranging from 20/14 (which is better than normal) to 20/40 in one eye of one case. In other words, neither the amount of vision nor the field of vision would have permitted one to make a diagnosis of the condition, but an examination of the fundus showed at once the true condition.

The first case showed in the right eye, where the vision was 20/14, no evidence of trouble at all; but the left eye, which had the same vision, showed, a little below and including the macula, an inability to recognize the fine detail of the fundus. This was evidently the first sign of cloudy swelling of the retina, and the space occupied by the edematous condition was no doubt exaggerated by the influence of gravity. On close questioning, she claimed that the lines in the wall paper were not continuous, and that certain details in the wall paper were not as clear as others. I had no hesitation in advising that this woman was in the early stages of a retinitis, which would eventually result in hemorrhages and marked loss of vision, as the condition was almost limited to the region of the macula."

"The second case had a vision of 20/20 in the right eye, and 20/14 in the left. In this case, the right eye was normal, except for a venous congestion on the inferior nasal quadrant of the field, and a slight

haziness of the retinal details on the borders of this region and in the macula. The left eye was normal in every respect. Taking into consideration her general symptoms and the fact that she complained of blurred vision, I thought that she, too, had a beginning retinitis which would probably end in serious loss of vision if the uterus was not emptied."

"The third case complained of black specks. Her vision was 20/40 in the right eye, and 20/25 in the left. An examination of the fundus in the right eye showed a large area, including and surrounding the macula, in which the details of the fundus were hazy, more marked at the bottom of the field. The fundus of the left eye showed a similar condition, but not quite so pronounced. The evening of the day of my examination, she had three convulsions, one just before child was born and two after."

"The recognition of this condition is not an easy matter, but by direct ophthalmoscopy we are able to get a magnified view of the details of the retina, and the condition seen in this manner suggests the cloudy swelling seen in the retina in microscopic sections of albuminuric retinitis. The pupil must be widely dilated, and with the electric ophthalmoscope, the examination can be made with great ease, even though the patient be confined to bed. I am perfectly certain that in my earlier years of practice, I failed to grasp the significance of this almost imperceptible haze of the details and was very apt, if I found the vision normal, to fail to recognize the significance of this exceedingly slight haze in the retinal detail, and to consider that the retina had not as yet become involved. But a larger experience, combined with seeing some of the cases go through a pronounced retinitis with the resultant damaged areas, has awakened me to the necessity of recognizing the condition in a beginning stage, and I believe that this condition can be recognized with certainty very much earlier than is generally supposed. This is especially true of primiparæ, who have had no previous retinal trouble, and where any departure from the normal may be safely considered as incident upon the ensuing pregnancy; but in an older patient who has had trouble previously, it would be necessary to have a knowledge of the fundus before one could diagnose with the same certainty the beginning of another retinitis. In fact, I am not certain that the diagnosis can be made in an old damaged retina, but I expect to see some cases with Dr. Dice which will allow me to speak more positively on this point. It is conceivable that after this condition has once occurred in a retina, the recovery is not complete enough so that a beginning similar condition can be identified early and easily."

"One of these cases particularly shows a very marked haziness of detail yet, although the vision is still normal, and she is able to notice certain distortions of lines in parts of the field, but the central vision remains normal. Whether this patient in a subsequent pregnancy would develop the same condition, and whether it would be as easily identified, with the results of the former inflammation not entirely cleared up, is a matter I am anxious to test. Pathologists believe that if the condition goes no further than cloudy swelling, the cell may recover to normal health, if the circulating toxin is promptly

removed. I believe the examination of the fundus is one of the most delicate, as well as most satisfactory, means of identifying this condition, and I believe it a more satisfactory test for the gravity of the toxemia than the presence of the slight amount of albumin in the urine."

"All of these patients made a most satisfactory recovery; one of them still sees a few black spots, but the vision is normal, and there are no gross lesions. But all of them went very near to a severe retinitis, which would have resulted in a distinct loss of vision because of the important area involved. It is a common experience to find in the fundus of a patient, who comes for refraction, evidences of an old inflammation, which the preliminary history has not elicited. A further inquiry into the history discloses that in some previous pregnancy the vision was blurred for several weeks, but that the family physician paid no attention to it, telling the patient she would recover after the child was born. If the area includes the macula, the vision is reduced to a degree incompatible with work, but many cases have a peripheral lesion to whose scotoma they soon become accustomed, thus minimizing the actual damage done. To understand these cases, one must realize that if one-quarter inch of the retina is left sound in the macula, the vision will be normal, although the field of vision is contracted; while if this quarter inch be destroyed, although the rest of the eye be normal, there will be no useful vision in this eye. From the standpoint of the ophthalmologist, the obstetrician has not paid sufficient attention to this extremely important subject."

In the cases cited above, the amount of albumin was not enormous in any, and the quantity of urine voided was never very scant; the blood pressures ranged from 160 to 190; two of them had headache, and one in addition had severe epigastric pain shortly before she went into premature labor. In the first case labor was induced, and in two it came on spontaneously, though prematurely, on the evening it was decided to interrupt the pregnancy.

Within the past month there have been two other cases of toxemia—in one the patient had no eye symptoms, and examination of fundus showed no abnormality; and while the blood pressure came down under treatment, the albumin increased a little, and labor came on several weeks ahead of time.

The other case had an increasing albuminuria, a steadily increasing blood pressure up to 165, severe frontal headache and spots before the eyes, all in spite of vigorous treatment, but before the fundi of the eyes could be examined she, too, went into premature labor.

While but one of the cases developed convulsions, there is no question but that they were forestalled by the induction of premature labor in the one case, and spontaneous premature labor in the other three, and in four of the five there were visual symptoms.



The first objective signs in the eyes in these toxic cases is a haziness of the fine detail of the fundus, the beginning of the cloudy swelling, the edema of a beginning retinitis, and it should be our duty to empty the uterus before the condition goes beyond the beginning stages. It is possible that rest, diet and active elimination may cause an improvement in the condition of the eye, but when it is once involved, only careful daily observation of the case in a hospital can justify delay, and then only when all other symptoms improve, and the eye condition does not extend. While no one symptom alone is sufficient to warrant the interruption of pregnancy, two or more, when properly interpreted by a careful observer, will usually enable one to act wisely.

Olshausen and others have emphasized the importance of epigastric pain in the later months, and especially in the presence of high blood pressure, as an ominous sign. Frontal headache, persistent, not relieved by cathartics, is likewise a danger signal.

Hirst urges that whatever the blood pressure with albuminuria, as soon as persistent headache occurs, and especially if there are disturbances of vision, and evidence of beginning retinitis, the pregnancy must be terminated at once, and temporizing in such a case is inexcusable.

Important as is the examination of the urine and the taking of the blood pressure during pregnancy, in order that we may early detect and properly measure the results of our treatment, in the presence of a toxemia, the careful examination of the fundus of the eye is most important, the condition of the retina being a most valuable index of the severity of the toxemia.

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## THE ALCOHOL DRAIN IN SEPTIC CASES REQUIRING CESAREAN SECTION.\*

BY

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THE following case will illustrate the point I wish to make in my previous paper on the alcohol drain in septic cases requiring Cesarean section.

July 14, 1910, Mrs. E. H., aged twenty-three, an American by birth, was sent to my service at St. Barnabas Hospital with the following history. Her last menstruation was on Oct. 14, 1909. She was in perfect health and had not consulted any physician during her pregnancy. On July 12th, at term, the patient had slight irregular

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labor pains at 9.00 P. M., which later became regular and quite severe. The midwife, who was in attendance all night, sent for a physician at eight in the morning after the patient was in labor for twenty-four hours. At 10.00 P. M. the os being fully dilated, a high forceps was attempted but failed to deliver the child. The patient was allowed to go on in labor until 8.00 A. M., July 14th, that is, forty-eight hours after labor began, when another physician was called. At this time the patient had a temperature of 104°, pulse 130, and had had two chills. She was considered by her doctor a very sick woman. He also tried high forceps delivery but without result. At 11.00 A. M., after a careful examination at the Hospital, the diagnosis of rachitic flat pelvis was made and the child was found alive. The temperature then was 105°, pulse 140, urine somewhat bloody, the perineum and vagina were deeply lacerated. The cervix could not be felt and the membranes had ruptured. The position of the child's head was L. O. P. There was a distinct caput succedaneum, and the discharge from the vagina had a distinctly unpleasant odor. As the patient was in a serious condition, it was decided to apply high forceps; and if this failed, to do a Porro operation, but this did not meet the approval of the woman or her husband. The patient said she would rather die than have her uterus removed and the child, being still alive, killed. After another attempt at high forceps delivery failed, the abdomen was opened in the median line and the uterus everted. The abdominal cavity was very carefully walled off. It was a very interesting sight to see the sharply contracted ring of Bandl. I decided to make my incision into the uterus from horn to horn, so that I would be farthest away from the vaginal outlet, the possible source of infection. A live child was born and the placenta removed. The uterine incision proved that the wall was less than  $\frac{1}{4}$  inch in thickness, and when the uterus contracted and the wound was repaired, the muscle was less than  $\frac{1}{2}$  inch in thickness. The incision was closed with No. 2 plain catgut, and sutures in three layers were used. The abdomen was closed with No. 1 plain catgut for the peritoneum, No. 1 chromicized gut for the muscle and fascia, and No. 1 catgut for the skin.

As I felt that this patient was critically ill and her chances for recovery were slight, I naturally thought of the alcohol drain, the treatment that has been giving us such wonderful results in puerperal septic endometritis. After the abdomen was closed and dressed, I introduced into the uterus through the vagina 4 inches of a rubber tube, No. 22 French. This tube was about 2 feet in length and had a funnel-shaped attachment. Around this tube a strip of iodoform gauze 2 inches in width was lightly packed. The vagina was also packed with the same material. Two ounces of a 25 per cent. solution of alcohol in water were allowed to flow slowly through the tube and moisten the gauze in the uterus and vagina. This was done every two hours, day and night, for four days. Twenty-four hours after Cesarean section the patient had a severe chill, the temperature remaining at 105°. On the third day the temperature came down to 102°, and pulse 90. On the fourth day the temperature was nor-

mal and remained normal. The tube and gauze were removed on the sixth day. On the twelfth day the patient developed a phlegmasia alba dolens of the left thigh. On the twenty-second day she left the hospital with a live and nursing baby in good condition. The patient still suffers from a slightly swollen thigh.

On Feb. 12, 1915, I was again called to see this patient after she had been in labor for eight hours, as her pains had suddenly ceased. An examination showed that her uterus was ruptured and the child in the abdominal cavity. The abdomen was opened and a dead child removed; the old scar in the uterus which had ruptured was excised and repaired.

May 10, 1916, that is, fourteen months later, she was readmitted to the hospital being eight and one-half months pregnant. I suggested Cesarean section, which was accepted, and both mother and child recovered.

Besides the above, I have had two similar cases recover following the use of the alcohol drain. My friend Dr. Strasser had one case, Dr. Hassling three cases, Dr. Minningham one case, Dr. Edgar Ill, two cases; all of these ten cases were severely septic and all were treated in various ways by physicians other than the operator. The septic condition in three of these cases was so severe that sloughing of the wound occurred and alcohol made its appearance in the abdominal incision. These cases nevertheless recovered.

In bringing this very interesting subject before this Association, I make no claim for a new treatment, as this method was brought before you at a meeting held in Niagara Falls, Aug. 18, 1897, under the title "Treatment of Puerperal Endometritis by the Carossa Method," by my brother, Dr. Ed. J. Ill. But as far as I know, I was the first one to use the alcohol drain following Cesarean section on previously infected cases. I doubt if I would have had the courage to use it in the first case, if I could have gotten the permission to do a craniotomy and embryotomy, or to do a Porro.

We have used the alcohol drain in septic endometritis following labor for many years with excellent results. Dr. A. F. Dowd read and published in the *New Jersey Medical Journal* a paper reporting 105 cases treated by this method at the Newark City Hospital, with only twenty deaths, occurring mostly in moribund cases. I am speaking of these results, as we have no connection with this hospital. The treatment is used extensively in our city and its surroundings with most gratifying results. It has been the custom of most of us to avoid Cesarean section in septic cases. The results and experience in ten cases in the hands of five different operators justify this suggestion that hereafter, whenever the child is alive, and cannot be born through the normal passage, the patient being septic, a Cesarean section should be done, followed by an alcohol drain.

THE TREATMENT OF ECTOPIC GESTATION BASED ON  
A STUDY OF 100 CASES, WITH A REPORT OF TWELVE  
CASES OF REPEATED ECTOPIC PREGNANCIES.\*

BY

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At the meeting of this Association in 1910, Dr. Ralph Waldo presented the results at Lebanon Hospital of the deferred operation for extrauterine pregnancy. His study was based upon an analysis of eighty-one cases, about 70 per cent. of which were brought into the hospital in profound shock. None of the patients were operated unless they showed signs of recovery from the shock which followed the hemorrhage. It was argued by the author that a woman suffering from a ruptured ectopic pregnancy seldom, if ever, dies of the hemorrhage, but of the shock which usually follows the hemorrhage, and if the patient is subjected to the additional shock of the operation, the chances of recovery are minimized.

This contention was supported by Robb, Sampson, and many others. Robb proved experimentally that a hemorrhage will cease in from fifteen to twenty minutes. He also maintained that a woman who weighs 130 pounds must lose 4 pounds of blood before she will succumb from the effects of the hemorrhage, and so large an amount of blood is rarely found in the free abdominal cavity during an operation or postmortem examination. Robb further contends that the sudden removal of a large quantity of recently accumulated fluid in the abdominal cavity, before the vessels have had time to adapt themselves to the altered mechanical conditions, is dangerous and may be followed by syncope. He maintained that patients in whom the bleeding wound is sufficient to cause death are rarely seen in time to be saved by operation, and so long as there is reasonable evidence that an immediate operation may be the wrong procedure, it is our duty to hold our hands and leave something to nature.

At that time there were two distinct schools—one advocating the immediate operation, the other the deferred operation, for ruptured extrauterine pregnancy. Since then the two schools

\* From the Gynecological Service of Lebanon Hospital.

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have somewhat changed their attitudes on the question. They learned that it is impossible to formulate a general method of procedure which may be applicable to all cases of ectopic pregnancy. Most of us have come to realize that individualization must be the keynote to the success of the treatment of any pathological condition we may encounter.

I have been particularly fortunate in having had the opportunity of observing both methods of treatment. During the time I was associated with the service of Dr. Waldo, practically no case of ectopic pregnancy was operated until the patient began to react from the shock. Our interest in this method of treatment was very keen. Every case was watched very carefully. Our service was the only gynecological service of any importance in the city of New York, in which the diagnosis of ruptured ectopic pregnancy did not spell immediate operation. Our results at that time compared very favorably with the results of other hospitals.

However, in the year 1911 two cases which terminated fatally, because the operation was delayed, entirely changed my attitude toward this question. These patients died before any operative measures were instituted. Since then the majority of patients in my service are operated as soon as possible after their admission to the hospital.

The series of cases I am to report now consists of all cases admitted to the gynecological service of Lebanon Hospital during the past eight years. The majority of these patients were operated on soon after their admission to the hospital.

A comparative study of the two series of cases shows very little difference in the final results. In both series the morbidity and mortality were about the same. We are really not in a position to state which is the better plan of treatment, unless we assume that some of the patients who were operated immediately would have died as a result of the continued hemorrhage, as was the case in the two cases cited above. On the other hand, it is difficult to prove this contention. I feel, however, that as long as we are unable to foretell in any given case how soon the hemorrhage may prove fatal, it is our duty to operate as soon as possible in the greatest number of instances. I do not believe that we are justified in delaying operative treatment, except possibly in patients who are apparently recovering from shock, and in whom the bleeding most likely has ceased. Those cases ought to be given a chance further to recuperate before an operation is undertaken. There is no immediate danger of hemorrhage in such cases, for when the bleeding has once stopped, it does not recur within twenty-four hours.



The most striking feature of this series of cases is that twelve patients were operated for repeated ectopic pregnancy, an unusually large percentage. It is difficult to gather complete statistics on this very important question, because the population in metropolitan cities is shifting and, therefore, it is impossible to follow closely the subsequent histories of the patients. Were it possible to make an actual study of the frequency of the recurrence of ectopic pregnancy, we would be in a better position to decide how to deal with the other tube during the operation of the first ectopic pregnancy.

An analysis of the cases in this series shows that nearly 90 per cent. of them were not diagnosticated until rupture had taken place. The patients began to show evidence of shock. It is interesting to note that in forty patients the diagnosis of incomplete abortion was made by the family physician, and these patients were subjected to curettage. Two patients were curetted twice, one in a period of three weeks; the other was recuretted at the end of ten days.

The diagnosis of tubal pregnancy before rupture takes place is difficult. There are not enough definite symptoms to warrant a positive diagnosis. The patient usually does not come to the physician because of the pain in the abdomen, but because of the irregular bleeding, and this latter they very often mistake for delayed menstruation. It is only when the bleeding becomes irregular and prolonged that they seek the advice of a physician. Very often these patients give a history of an attempt at a criminal abortion. The physician attributes the irregular bleeding to retained secundines, and curettage is therefore advised and performed. There were nine such patients in this series. Four patients died, one on the third day from uremia, two from sepsis. In one of the latter a criminal abortion was performed; the uterus was curetted, and the patient became septic. One died two hours later; she did not rally from the shock.

A study of the signs and symptoms of this series discloses nothing unusual. All the symptoms which are usually associated with extrauterine pregnancy, as they may be traced back in patients who are admitted to the hospital for this condition, were present. In hospital practice the problem is not one of diagnosis, for the majority of the patients are brought by the ambulance either in shock, or with a history of having had severe pain and fainting spells on one, two, or more occasions. A definite mass was made out in but a few cases. It is rather hard to outline an ectopic mass, unless the pregnancy has advanced beyond six weeks. Usually there was some fulness or bulging in either the right or left culdesac.

The patients are usually so tender and rigid that it is difficult to make a thorough examination. We must rely on the symptom-complex presented by the patient, not upon any one or two characteristic signs.

In this series, the youngest patient was nineteen, the oldest forty-one years.

Between 20 and 25.....	19 cases
Between 25 and 30.....	27 cases
Between 30 and 35.....	28 cases
Between 35 and 40.....	21 cases
Between 40 and over.....	4 cases

'The number of previous children was stated in eighty-four patients.

Never pregnant.....	17 cases
Para-i.....	22 cases
Para-ii.....	16 cases
Para-iii.....	10 cases
Para-iv.....	9 cases
Para-v.....	5 cases
Para-vi.....	1 case
Para-vii.....	1 case
Para-viii.....	2 cases
Para-ix.....	1 case

The last pregnancy was stated in forty-five cases.

Six months.....	1 case
One year.....	12 cases
Three years.....	7 cases
Four years.....	4 cases
Five years.....	7 cases
Six years.....	3 cases
Seven years.....	1 case
Eight years.....	1 case
Ten years.....	1 case
Twelve years.....	4 cases
Thirteen years.....	2 cases
Sixteen years.....	2 cases

The last menstrual period was stated in seventy-five cases.

One week.....	1 case
Two weeks.....	5 cases
Three weeks.....	7 cases
Four weeks.....	7 cases
Five weeks.....	5 cases
Six weeks.....	9 cases
Seven weeks.....	8 cases
Eight weeks.....	15 cases
Nine weeks.....	6 cases

Ten weeks.....	4 cases
Eleven weeks.....	2 cases
Twelve weeks.....	5 cases
One year (nursing baby).....	1 case

Except for amenorrhea, few of the patients suspected that they were pregnant. Most of them skipped a period and thereafter bled irregularly. A number of them never ceased bleeding after the irregular menstruation.

Recently, Richard R. Smith, and M. Rabinowitz have presented complete studies on the subject of repeated ectopic gestation, also adding their own experiences. Smith not only reviewed the recorded cases, but also communicated with a number of gynecologists of wide experience. His report is based on an analysis of 2998 cases in which there were 113 cases of recurrent ectopic pregnancy, or 3.8 per cent. I believe that the percentage would be greater were it possible to trace the subsequent histories of a large number of patients who suffered from extrauterine pregnancy.

The histories of the patients who suffered from repeated extrauterine pregnancy are as follows:

CASE I.—Hospital No. 25085, Mrs. P. S., thirty-eight years old. Referred by Dr. Fried. Family history, negative. Menstruation began at thirteen, twenty-eight-day type, two to three days. No pain, Married seventeen years, two children, one fifteen years old, the last one a year old. Was operated for ectopic pregnancy eight years ago. *Present History:* Four months ago patient skipped one period. Had slight pain, and occasional hemorrhages. Bled profusely at her regular menstrual period. Vaginal examination disclosed a mass in the right culdesac. When the abdomen was opened, a pregnant mass was found in the right tube, and also free blood in the peritoneal cavity.

CASE II.—Hospital No. 35623, Mrs. L. E. Referred by Dr. Goldberg. Admitted December 16, 1911. Aged forty years. Menstrual history began at thirteen, menstruated every four weeks for three to four days. No pain. Married twenty-three years ago, and has seven living children; one miscarriage in her early married life. Was operated two years ago in this hospital for left ectopic gestation. Menstruated last three weeks ago. Several days later she began to have general abdominal cramps, pain localized in the right iliac fossa. Operation December 18, 1911. Right tube was found ruptured, and abdominal cavity filled with clots.

CASE III.—Hospital No. 42265, Mrs. S. S. Referred by Dr. Lachowski. Admitted Sept. 30, 1913. Aged thirty-two years. Menstrual history, normal. Married thirteen years; one child twelve years old. Second pregnancy resulted in a ruptured ectopic pregnancy six and a half years ago. Last period June 26, 1913. Two days previous to her admission to the hospital, she began to

bleed profusely, and half an hour later began to have sharp pains in the lower part of the abdomen. Was well the next day. The following night she had another attack of abdominal pain and felt like fainting. When the abdomen was opened, the right tube was found distended with blood and partly ruptured, and blood in the abdominal cavity.

CASE IV.—Hospital No. 43628. Mrs. B. K., aged twenty-nine years. Admitted Jan. 5, 1914. Applied for admission because of nausea and vomiting of pregnancy. Was operated on for ectopic pregnancy in this hospital one year ago. *Present History:* Menstruated last Oct. 13th. Six weeks later she began to stain. Was curetted on Dec. 14, 1913. Eleven days later she began to spot again; bleeding was accompanied by cramps. On operation a four months' fetus and placenta were found in the lumen of the tube.

CASE V.—Hospital No. 45929. Mrs. A. B., thirty-four years old. Referred by Dr. Rosenthal. Admitted June 29, 1914. Menstrual history, normal. Married seventeen years. Had one child sixteen years ago; no miscarriages. Had typhoid nine years ago. Was operated at this hospital for unruptured ectopic pregnancy two years ago. Last period March 22d. Was perfectly well for seven weeks. Did not think she was pregnant. Began to bleed May 11th, but had no pain until May 29th, when she began to have sharp abdominal pains, having fainting spells and vomiting occasionally. Remained in bed for ten days. Has had severe pain during defecation. Operated July 2, 1914. Left tube found large, soft and distended, partly ruptured. The abdominal cavity contained many blood clots.

CASE VI.—Hospital No. 46610. Mrs. L. R., admitted August 17, 1914. Menstruation began at twelve; always irregular and painful. Married eleven years ago; no children; one miscarriage. Was operated eight years ago for right ruptured ectopic pregnancy. She was curetted two years ago. Menstruated last June 22d. On July 6th she began to spot and later began to bleed profusely, at the same time having cramp-like pains in the lower portion of the abdomen. Never fainted. Operated August 18, 1914. Left tube greatly enlarged and surrounded by blood clots.

CASE VII.—Hospital No. 48870. Mrs. L. S., aged thirty-six. Referred by Dr. Harwich. Para-vi, was operated on one year ago for ruptured ectopic pregnancy. Five years ago an ovarian cyst was removed from the same side. For the last two months she had cramp-like pains in the abdomen; fainted twice. On operation right tube was found ruptured.

CASE VIII.—Hospital 49399. Mrs. E. L., aged twenty-six. Referred by Dr. Schnapper. Was operated for ruptured ectopic pregnancy two years ago. Menstruated last six weeks ago, and since then she had been bleeding and spotting. Two weeks before admission to the hospital, she had sudden severe cramps in the abdomen and fainted. She had a similar attack on the day of her admission. On operation the left tube was found to be ruptured and the ovary large and cystic.



CASE IX.—Hospital 51071. Mrs. J. B., aged twenty-three. Referred by Dr. Smiley. Married two years. Had one abortion; Operated on for ruptured ectopic eight months ago. Brought into the hospital with typical symptoms and signs of ruptured ectopic pregnancy. On operation left tube was found ruptured; the abdominal cavity was full of blood. A small fibroid tumor was found in the fundus of the uterus, which was removed.

CASE X.—Hospital No. 51986. Mrs. R. S., aged twenty-four years. Had ruptured ectopic pregnancy one year ago. Three weeks prior to her admission to the hospital she began to have pain in the abdomen, which localized itself in the right iliac region. Never fainted, but vomited on several occasions. Operation by Dr. Roth. Right tube was found to be swollen and distended, partly ruptured. Old blood clots were found in the peritoneal cavity.

CASE XI.—Hospital No. 59684. Mrs. F. F., aged twenty-three years. Referred by Dr. Kling. Married four years; no children; two miscarriages, one eighteen months ago. One year ago she was operated for a right tubal pregnancy. Menstruated last five weeks ago. Two days before her admission to the hospital she began to stain but had no pains. One week later she began to have a dull steady pain in the left side. She vomited frequently and felt faint. On operation left extrauterine pregnancy was found and a great deal of free blood in the abdominal cavity.

CASE XII.—Hospital No. 57551. Mrs. R. G., aged twenty-two years. Married three years. Was operated on for ectopic pregnancy two and a half years ago. Eight months later she returned, and upon examination I found her about three months pregnant. I again examined her in the sixth month of pregnancy and found her condition normal. In the seventh month she had a severe attack of sharp pain in the abdomen. A neighboring physician was called in and he gave her some morphine hypodermatically. The following day she felt better, but she did not feel any fetal movements. During the eighth month she came to New York from Bridgeport to consult me about her condition. On examination she presented the clinical picture of a woman who is in the eighth month of her pregnancy. She suffered no pain or tenderness anywhere. Fetal heart sounds could not be elicited after a most thorough examination. I then informed her that the fetus was most likely dead, and that she should wait ten to fourteen days, and if labor did not set in, it should be induced. Ten days passed there were no signs of labor and, according to her history, the fetus had been dead for nearly a month. I had her admitted to the Lebanon Hospital for induction of labor. After the usual preparation, I inserted a large catheter into the uterus and packed the cervix with gauze, but labor failed to set in. I removed the catheter and packing at the end of twenty-four hours, gave her a rest for twenty-four hours, and reintroduced a catheter and packing of the cervix, but labor still failed to set in. At the end of twenty-four hours the catheter and packing were removed and under a general anesthetic a No. 2 Barnes was introduced. This was later followed by two doses of pituitrin. She had some slight pain in the

abdomen, but labor did not ensue. The bag was expelled at the end of eighteen hours, and the patient apparently felt well. I did not wish to suggest a major surgical operation at that time, so advised the patient to go home and return to the hospital in about ten days. She remained at home two weeks, during which time I saw her twice. She was readmitted to the hospital after she was convinced that labor would not set in of its own accord. She was again prepared for induction of labor. At this time I informed the family that labor could not be induced because the child might have escaped from the uterus at the time she was taken ill in the seventh month of pregnancy, and when she ceased to feel the fetal movements. In order to reassure myself on that point, I thought it advisable to examine her under a general anesthetic, to dilate the cervix, in order to make a digital exploration of the uterine cavity. When I attempted to dilate the cervix a great deal of bleeding was encountered. The cervix was quickly packed and the patient returned to bed. Two days later I decided upon an abdominal operation.

When the abdomen was opened a large amount of fluid escaped and a fully developed fetus, weighing about 6 pounds, was found floating in the abdominal cavity. The placenta, hard, dry, pale and shriveled, was found to be attached in the region of the right kidney. There was no evidence of fetal membranes; the abdomen was closed, and the wound drained at its lower angle. The patient made an uneventful recovery. I at one time considered this case as a spontaneous rupture of the uterus during the seventh month of pregnancy, but after a careful study of the case I came to the conclusion that this patient must have had a tubal abortion, followed by a secondary abdominal pregnancy.

Repeated ectopic pregnancies are more frequent than is generally supposed. While we all must admit that conservation of the other tube is necessary in women who are operated on for ectopic pregnancy, and who have had no children, however, I feel that patients suffering from ectopic pregnancy, who have had three or more children, should be explained the danger of a repeated ectopic pregnancy, and with their consent the tube on the other side should either be ligated or resected.

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## THE END RESULTS OF THE TREATMENT OF INOPERABLE UTERINE CANCER BY HEAT.\*

BY

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IN women with good kidneys and at least a fair heart, who suffer from inoperable uterine carcinoma, the moderate heat technic can

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be safely applied in 95 per cent. of the cases. What we can hope to accomplish with the treatment can be summarized under three main divisions. The first includes the arrest of offensive discharge, the checking of hemorrhage, inhibiting septic absorption with consequent disappearance of the cachexia, interrupting the persistent pelvic ache, improving the nutrition and morale of the patient for as yet an unknown average of months, and permitting the approach of death, if it must come from uterine cancer, without brutality.

The second great division comprises 35 per cent. of the cases of inoperable uterine carcinoma. These are the cases in which complete postmortem examinations, checked up by careful microscopic study, show no metastasis outside of the pelvis; the patients dying unoperated. It is in this class of cases that the heat technic, when applied in an experienced way, will produce its best results. Also, it is in this 35 per cent. class that many of the favorable surprises, following the use of heat, will occur. It is here that the borderland inoperable case can be returned to the safely operable class by the use of heat.

The third great division is based on my own statistics of ten women out of sixty-five in whom I have applied the heat, and who are well and clinically free from cancer from two to nine years following the treatment ( $15\frac{5}{13}$  per cent.). Practically all of these cases, as far as I have records, were in the second division mentioned above. Attention is called to the fact that the abdomen was not opened for the application of heat in my early cases and the extent, therefore, of abdominal or pelvic gland involvement was not determined.<sup>1</sup>

Before the present-day heat technic was evolved, surgeons of necessity recognized but two types of uterine carcinoma: the operable and inoperable. The basis of the decision upon the part of the surgeon as to which class a given case belonged depended on a number of factors, the chief of which were his experience, skill and courage as an operator.

The heat technic, as shown above, has made it possible to add greatly to the number of advanced cases that are legitimately operable by the knife after the application of the heat.

I trust, however, that I may not be understood as advocating the use of the knife in any form of cancer treatment. What I have said above refers merely to the fact that if the knife is to be used at all, the gross mass of cancer should first be destroyed, as far as possible, by the heat. Furthermore, if the heat has not been made to

<sup>1</sup> Opening the abdomen for the application of heat was first done by me in the case of Mrs. W., August 2, 1912.

reach the outermost confines of the disease and the normal resistance of the patient, whatever this may be, does not take care of what has not been destroyed by the heat, the knife will not prevent a recrudescence of the cancer except in the rare chance where the blade has encircled the disease at its outermost limits. The time has come for surgeons to recognize as a real fact that when they use a knife, unfortified with heat, on a patient suffering from uterine or any other form of cancer, they invite autoreinfection of that patient.

The mystery of the varying vulnerability of the cancer cell to different forms of treatment that have been advocated for its destruction is still a remarkably insistent fact. Every method of treatment so far advanced, as developed by its originators, has cures to its credit. This can be said of the arsenic paste of Marsden in surface cancer; of the treatment of cervical cancer by the application of acetone, according to the method of Gellhorn; the high amputation of the carcinomatous cervix with the electrocautery by the technic of Byrne; the use of the red-hot soldering iron in the same condition by A. J. Ochsner; the deep penetration method by the x-ray and the Coolidge tube as advocated, especially in this country, by Pfahler; the use of radium favored by many brilliant advocates of its claims almost to the exclusion of every other form of treatment. The various methods that have grown out of the highly scientific development of the electric current also cannot be ignored here, when the question of a practical cure in the uterine and other forms of carcinoma is before us for consideration.<sup>1</sup> The difficulty that confronts the surgeon is to know what method to choose for the treatment of *his* case of carcinoma, not that cases have not gotten what we have a right to consider a cure from one or all of the various methods that have been advocated. That cases of cancer have been cured by every one of the methods mentioned above admits of no doubt; but so far no one has been able to tell us the rationale of the cure. Clinically, we must be convinced that there are high and low degrees of virulence in the cancer cell and by the same token we know that, clinically, we have no method of determining, in a given case, the degree of that virulence. An apparently first-stage case and from the view point of our usual experience, one in every way favorable for the successful employment of the recognized surgery of to-day, will not infrequently be stimulated into new and tremendous activity by the treatment; while an apparently much

<sup>1</sup> In my paper published in the *Journal of the A. M. A.*, May 23, 1914, lxii, pp. 1631-1634, I give more in detail an enumeration of the many methods which have been favored by physicians and surgeons in the treatment of cancer.



more active and advanced case of the disease will occasionally clear up under any one of the recognized methods of treatment in a most surprising and inexplicable way. There are evidently grades of the disease and for them, it would seem, corresponding grades of treatment must be found. Only in this way can an explanation be given of a case that was first treated by the x-ray and temporarily improved; then later by radium, with improvement; and then abandoned as hopeless; and finally subjected to the low-heat technic two and a half years after the first vaginal bleeding. The result has been that fourteen months after the primary application of the heat this woman "appears in splendid health and has been able to resume her social duties."

The beneficent hope that impels us all when looking for the most efficient treatment for uterine cancer must include that which will give us some clinical insight into the character of the cell producing the symptoms. J. Walter Vaughan, of Detroit, in a paper<sup>(1)</sup> read before the Gynecological Section of the A. M. A. in June, of this year, gives us a hopeful and stimulating review of the blood picture in carcinoma. Work of this character has in it the promise that finally we shall have a reasonably accurate method by which we can determine in the laboratory and before operation, the probable degree of malignancy that the patient possesses. The results in the treatment of pelvic cancer in women, by the application of heat, depend in large measure on the accessibility of the disease to the application of the heat, and upon the knowledge, on the part of the surgeon, of how far and how thoroughly he can go in its use. Heat will kill anything if applied long enough and thoroughly enough and cancer is no exception to this rule. This statement, simple as it is, covers the governing principle as it relates to the heat technic in cancer, published in my first paper on this subject in 1912<sup>(2)</sup>. The critics of the treatment of uterine cancer by heat seem to forget that its use was first suggested only in the inoperable forms of uterine cancer. Increasing experience on the part of surgeons has made it seem rational to make use of it at least as a preliminary treatment in all stages of the disease, wherever located. This is especially emphasized by Balfour<sup>(3)</sup> of the Mayo Clinic.

The end results, as far as my personal experience goes with the use of heat in uterine cancer, are based on sixty-five cases. Thirteen of these will be found reported in my first paper, already referred to.<sup>1</sup> Two of this first series ( $15\frac{5}{13}$  per cent.) are apparently perfectly

<sup>1</sup> *Journal of the A. M. A.*, May 23, 1914, lxii, pp. 1631-1634.

well at this time. Fifty-two additional cases make up the total of my cases up to two years ago. Of these, eight are alive and, as far as can be determined, well, and also free from cancer. The same percentage, as in my first thirteen cases, holds also in this second series of fifty-two cases; viz.,  $15\frac{5}{13}$  per cent. In none of my first thirteen cases was the abdomen opened. I added this feature to the operation after I realized by a process of slow appreciation, the possibilities in a more thorough application of the heat. This was especially true as one of my first patients (Mrs. F. H. F.), after the application of the heat, continued to remain free from what was in the beginning an utterly inoperable uterine cancer. The first patient in whom I opened the abdomen was Mrs. E. H. W., August 2, 1912, five years and five months ago. These two cases were in the utterly hopeless class as far as the ordinary panhysterectomy or Ries-Wertheim technic was concerned and this is true of the total of ten women who are alive and apparently cured after from nine years and three months in the oldest case to two years plus in the most recent ones.

In the table that I have arranged, a brief reference to the findings in each case at the time of operation will be found. The writer realizes fully the futility of reports of cures in cancer from any treatment based on a small number of cases and with a comparatively short period since the application of the treatment in the larger number of the cases here reported.

This statement applies alike, especially at this time, to the results in the treatment of cancer by the x-ray, radium and to the heat technic. All of these methods are, so to speak, living in glass houses. But to condemn any of them, on the basis of their failures, is most unfortunate in the interests of scientific progress. The question in the treatment of cervical cancer by any of the three methods just mentioned is not how many are cured. The question, as I see it, is are any of them cured? At the present time it is much more important to know how the cures are obtained in the few cases, than to record not only the failures, but also the disagreeable sequelæ; and on these alone condemn the treatment. We know that without treatment they all die. If some of them live and are apparently cured, this is important and worth investigating with the open mind of the scientific investigator.

From the standpoint of the results here recorded from the heat technic in ten cases apparently cured out of a total of sixty-five, the subject can not but gain new interest for surgeons. In none of the ten was any additional treatment used except in the stout

woman who was given sufficient of the so-called thyroid extract to produce a mild form of hyperthyroidism.

The following table gives a brief résumé of the condition of these ten patients at the time of the operation, and the results of their operation to date. The remaining tables are self-explanatory.

LIST OF PATIENTS ALIVE AND CLINICALLY CURED.

The numerals opposite each name give the clue (to be found in the footnote\*) describing the conditions at operation.

Mrs. F. H. F. . . .	15-12-9-7-4-39-8-21-19-17-16-41-42-27.	Lived 9 yrs., 3 mos.
Mrs. A. G. H. . . .	15-21-19-27-11-41-17.	Lived 6 yrs., 7 mos.
Mrs. E. W. W. . . .	14-21-19-8-7-13-26-43-42-41-27-17.	Lived 5 yrs., 4 mos.
Mrs. J. M. . . . .	14-21-41-42-33-7-21-27-17.	Lived 4 yrs., 10 mos.
Mrs. D. C. McD. . .	15-11-16-17-21-27-41-22-18.	Lived 3 yrs., 3 mos.
Mrs. J. W. D. . . .	14-11-9-7-4-16-17-41-22-18.	Lived 3 yrs., 2 mos.
Mrs. Rebecca L. . .	14-20-22-18-16-17-7-9-11-41.	Lived 2 yrs., 9 mos.
Mrs. Maud McC. . .	14-45-32-22-21-18-7-9-4-12-41.	Lived 2 yrs., 9 mos.
Mrs. Alvin R. H. . .	14-20-22-18-17-4-7-11.	Lived 2 yrs., 7 mos.
Mrs. J. L. D. . . . .	1-14-20-18-16-41-46-7-9-12.	Lived 2 yrs., 5 mos.

1. Previously operated in another clinic.
2. Excessive use of morphine.
3. Vesicovaginal fistula from cancer before heat technic employed.
4. Vesicovaginal fistula produced by heat.
5. Pyonephritis before operation.
7. Cachexia present.
8. Palliative operation.
9. Bladder involved.
10. Rectum involved.
11. Pelvic contents movable.
12. Pelvic contents slightly movable.
13. Pelvic contents fixed.
14. Abdomen opened.
15. Abdomen not opened.
16. Vagina involved.
17. Cervix and one, or both, broad ligaments involved.
18. Type—infiltrating.
19. Type—vegetative.
20. Iliac arteries tied.
21. Iliac arteries not tied.
22. Vesicovaginal fistula closed successfully.
23. Vesicovaginal fistula closed unsuccessfully.
24. Nephrectomy for ureteral fistula.

\* Key to numerals opposite the name of each patient and which describes their conditions.

25. Suffering from diabetes.
26. Recauterized.
27. High heat.
28. Died from hemorrhage.
29. Still alive, but not recovering.
30. Left inguinal colostomy.
31. Died from uremia.
32. Gall-stones.
33. Uterus sloughed out.
34. Septic infection.
35. Rectovaginal fistula.
36. Cause of death unknown.
37. Cancer of pylorus.
38. Abdomen opened with cautery because of recurrence in abdominal scar.
39. Closed spontaneously.
40. Followed by hysterectomy in five months, because of suspicion that a recurrence was developing in posterior lip of stump that was left.
41. Excessive hemorrhage and foul discharge.
42. Great loss of weight.
43. Hysterectomy with cautery knife because of recurrence in body of uterus (2 yrs., 2 mos.).
44. Involvement left labia minora, marked leukoplakia involving entire vulva.
45. Enormous omental umbilical hernia containing most of transverse colon.
46. Resection of ileum adherent to cervical stump from former operation.

## LIST OF PATIENTS WHO LIVED LESS THAN ONE YEAR.

Mrs. W. H. B...	14-28-21-7-8-9-16-13-18-17.	Lived 3 days.
Mrs. O. L. N...	14-13-27-26-5-7-9-17.	Lived 6 mos.
Mrs. J. J. D...	1-13-9-30-27-21-26-5-7-10-8.	Lived 5 mos.
Mrs. Wm. J...	14-13-9-10-8-7-31-32-33-27-16-17.	Lived 2 mos.
Mrs. C. H. T...	14-13-12-9-10-8-7-16-17-5-21-27.	Lived 3 hrs.
Mrs. P. J. B...	14-3-5-8-9-10-13-16-17-31-7.	Lived 2 mos.
Mrs. Fred F...	14-21-9-10-8-5-3-7-13-18.	Lived 6 days.
Mrs. Augusta R.	14-21-34-2-5-18.	Lived 1 mo.
Mrs. E. E. C...	15-13-7-9-10-16-17-18.	Lived 40 days
Mrs. J. E. S...	15-7-8-9-10-16-12-17-21-26-27.	Lived 6 mos.
Mrs. Christine S.	14-8-9-10-12-7-34-16-17-18-21-27.	Lived 5 mos.
Mrs. A. J. K...	1-14-13-8-9-10-7-18-21-3-16-17-18-21.	Lived 1 mo.
Mrs. A. H. K...	14-4-7-8-9-10-12-16-17-18-20-23-5.	Lived 6 mos.
Mrs. Wm. T. B...	14-5-21-18-16-17-26-22-12-9-10-7-8.	Lived 10 mos., 5 days.
Mrs. John B...	14-7-8-13-9-10-19-16-17-21-27-31-6.	Lived 38 days.
Mrs. Franklin H.	15-7-8-9-10-16-17-18-21.	Lived 3 mos.
Mrs. E. J. H...	1-35-8-9-10-13-21-16-17-18.	Lived 6 mos.
Mrs. O. B. B...	14-20-13-36-7-8.	Lived 24 hrs.
Mrs. G. L. C...	15-16-17-18-21-27-12-7-8.	Lived 8 mos.
Miss Emma G...	14-7-18-21-16-17-26-28.	Lived 4 mos.
Mrs. Chas. B...	1-7-8-34-5-13-14-21-18-16-17.	Lived 24 hrs.
Mrs. J. P. B...	14-16-17-18-37-13-28-8-9-10-26.	Lived 6 mos.
Mrs. Carrie S...	1-7-8-9-10-13-14-21-18-16-17-5.	Lived 4 mos.



Mrs. Edward W.	14-21-34-18-16-17-26-8-13.	Lived 8 mos.
Mrs. Chas. A. R.	14-7-21-9-10-12-18-16-17-8.	Lived 4 mos.
Mrs. G. W. W...	15-16-17-18-21-26-27-7-8.	Lived 7 mos.
Miss Jennie S...	1-14-8-7-5-16-17-18-21-9-10-13.	Lived 2 mos.
Mrs. O. M. T...	14-8-3-7-9-10-13-21-16-17-18-26-27.	Lived 9 mos.
Mrs. Sarah L....	14-13-3-5-18-26-16-17-27-7-8-9-10-21.	Lived 1 mo.
Mrs. Celia H....	14-21-31-7-8-9-10-12-18-5-27-13.	Lived 20 days
Mrs. Geo. S....	14-8-21-2-7-9-10-12-16-17-18.	Lived 12 days
Mrs. A. L. P....	14-21-28-18-8-9-7-17-11.	Lived 2 days
Mrs. J. R. T....	1-8-26-14-21-7-5-9-10-13-16.	Lived 3 mos.
Mrs. C. F. R....	1-8-7-21-18-16-17-9-10-13-38-6.	Lived 6 mos.
Mrs. Cora A....	14-5-8-9-10-13-4-21-18-16-17-31-6.	Lived 7 mos.

## LIST OF PATIENTS WHO LIVED ONE YEAR AND SEVERAL MONTHS.

Mrs. G. W. W...	1-3-15-13.	Lived 1 yr., 7 mos.
Mrs. M. S.....	1-3-13-15-16-17-21-25.	Lived 1 yr., 8 mos.
Mrs. A. R.....	1-21-7-8-9-10-4-14-16-17-21-26.	Lived 1 yr., 3 mos.
Mrs. L. G. S....	14-13-4-7-8-23-17-18-20-23-26-16.	Lived 1 yr.
Mrs. E. M.....	13-2-4-7-12-14-16-17-18-20-23-26.	Lived 1 yr.
Mrs. H. E.....	14-15-27-26-28-16-17-18-7-8-9-13.	Lived 1 yr., 8 mos.
Mrs. L. C. G....	4-12-7-9-14-21-18-23-26-6-8-16-17.	Lived 1 yr., 1 mo.
Mrs. J. E.....	20-13-14-6-7-8-9-18-16-17.	Lived 1 yr.
Mrs. M. C. S....	1-29-4-6-8-7-9-13-14-16-18-23-26.	Lived 1 yr., 7 mos.
Mrs. M. W.....	7-8-11-14-20-18-17-41.	Lived 1 yr., 8 mos.

## LIST OF PATIENTS WHO LIVED TWO YEARS AND SEVERAL MONTHS.

Mrs. R. G.....	7-13-9-10-14-18-16-17-23-24-20-26-21.	Lived 2 yrs., 1 mo.
Mrs. H. A.....	15-21-18-17-8-7-11-27.	Lived 2 yrs., 2 mos.
Mrs. D. M.....	1-14-13-9-7-6-4-16-17-18-26-27-21-41.	Lived 2 yrs., 10 mos.

## PATIENT WHO LIVED THREE YEARS AND SEVERAL MONTHS.

Mrs. E. L.....	14-13-21-18-16-17-23-26-27-7-8-9-10	Lived 3 yrs., 2 mos.
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Since this report was compiled a few additional cases have come into the two-year period and these will be published with subsequent reports.

From my experience with the heat technic in both operable and inoperable uterine carcinoma, I am convinced that it offers more as a primary measure, both in the operable and inoperable uterine cancer case, than any other method of treatment so far devised. I believe that I am warranted in this conclusion not only from my own experience but from that of many surgeons who have followed my work and reported their results to me. One of these is from Dr. W. J. Mayo who reports, in a personal communication, forty-three cases in which the uterus was removed by panhysterectomy following the application of heat, and in twenty-five of these no carcinoma cells were found. These uteri were removed all the way from twenty-five days to one year after the application of the heat. In the eighteen remaining cases in which carcinoma cells were found, the time elapsing between the use of the heat and the panhysterectomy was from five days in the shortest interval to four months, seventeen days in the longest. In reference to these eighteen cases, Dr. Mayo in his report adds the following: "In the cases in which carcinoma was found after the hysterectomy, the cautery had not been as thoroughly applied as it should have been, especially that it had not been carried up into the uterus as far as in the other cases." Dr. Wm. C. MacCarty, one of their pathologists, also told me that they had made an especial effort to find the cancer cells in the removed specimens, which had been subjected to the heat technic.

Dr. S. M. D. Clark, of New Orleans, has also had a large series of cases with practically the same results. It is to be regretted that we have no clinical method by which the degree of malignancy can be determined from the gross appearances of the disease. I am sure that we have all had the experience of seeing some bad cases, as far as the physical appearances are concerned, do well; while others that seemed to be most favorable for permanent results in an operative way, did badly as far as a recurrence of the disease was concerned. This is well illustrated by a case of a woman, aged sixty-four, who had a small carcinoma of the cervix combined with a marked procidentia. It seemed so easy, from an operative standpoint, that I cauterized her cervix in a rather perfunctory way and then did a vaginal hysterectomy, following the usual knife technic, attaching the vaginal walls to the broad ligaments. In six weeks, this woman's pelvis was filled with carcinoma, and she died from the disease in a few weeks more. This case, I am sure, would have been considered most favorable for a Reis-Wertheim operation by those surgeons who are partial to that procedure. But the result shows that either my judgment was poor, or that I overlooked the

fact that the degree of malignancy can never be told from the naked-eye appearances.

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## RETROPERITONEAL HERNIA IN THE DUODENOJEJUNAL FOSSA.\*

BY

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(With one illustration.)

ON February 10, 1917, a patient was admitted to my service at the Woman's Hospital who presented a very interesting case of retroperitoneal hernia of the duodenojejunal fossa. The history dates back seven years. A careful review shows how difficult and often impossible it is to diagnose a case of this kind, and how misleading subjective symptoms may be.

Mrs. J. H., aged fifty-two, a widow for two years, was admitted to the Woman's Hospital complaining of pain in the lower end of her spine. Her climacteric occurred seven years ago without incident. She had been married thirty years and had four children.

Present symptoms: For the past three years patient has had aching pain at the lower end of spine, increased by activity, but not severe enough to keep her awake at night. It is also increased by exposure to cold. Appetite is good, bowels regular. Patient has no abdominal distress of any kind.

Inquiring into her past history, the following information was furnished: She had typhoid fever twenty years ago, smallpox when ten years old. She was operated on six years ago for the same symptoms she is presenting to-day, namely pain in lower part of sacrum.

The patient was operated upon in another service. The following were the operations performed: divulsion and curettage, trachelorrhaphy, perineorrhaphy, and repair of cystocele. These operations were done on September 28, 1910. Three months later finding no re-

\* Read at a meeting of the New York Obstetrical Society, October 9, 1917.

lief from the pain in the lower end of her spine, she again sought for help. This time a diagnosis of coccygodinia was made and on December 5, 1910, a coccygectomy was performed. The recovery from the operation was prompt, the wound healing by primary union. There was, however, no relief of pain.

In view of what is known about the case, it is of interest to pay a little attention to the subjective symptom that the patient pre-

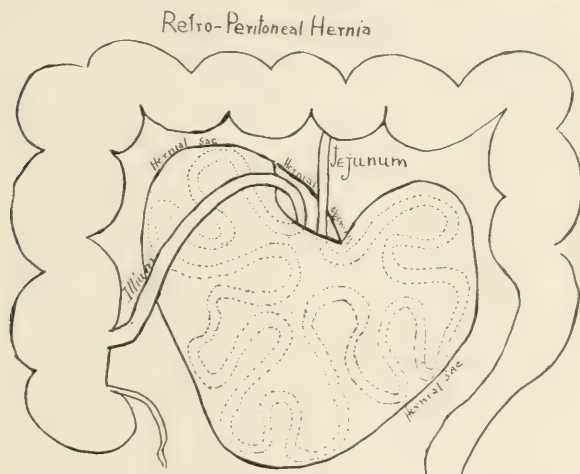


FIG. 1.—Retroperitoneal hernia, showing relations to intestinal tract.

sented during the seven years since the operation of coccygectomy. Throughout all these years, there was this dull pain in the lower part of the sacrococcygeal region. When the patient first presented herself she showed lacerations of the birth canal, with cystocele and rectocele, and her subjective symptoms were interpreted as due to the lesions presented. As no relief followed the operations and the symptoms persisted the coccyx was blamed for the symptoms, and the bone was removed. But no relief of symptoms followed this operation.

When the patient presented herself again, the problem was to discover the cause of this persistent pain in the lower part of her sacral region. In the course of a very careful physical examination it was observed that there was pain in the abdomen, elicited on gentle palpation. It was also noted that the patient had pain at all times, whether she was sitting, standing or lying down. She could not sleep on her side. When flat on her back she was most comfortable. X-ray examinations and cystoscopic studies failed to throw any light on the subject. Repeated abdominal examina-



tions always gave the same result, namely, pain on palpation. On account of this an exploratory abdominal incision was decided on, and the operation accepted by the patient. On bimanual examination nothing abnormal was discovered. The uterus was small, having undergone the usual involution incident to the menopause, the adnexa were not palpable. There was, however, a persistent general abdominal pain on palpation.

On February 16, 1917, the abdomen was incised in the midline below the umbilicus, on opening up the peritoneal cavity and lifting up the great omentum, a large sac came into view which contained numerous coils of intestines. The sac filled practically the entire abdominal cavity. It was covered by the great omentum and surrounded, so to say hugged, on all sides by the large intestines. On the right side the cecum and ascending colon partly covered the sac, while the transverse colon hung over the anterior surface. The descending colon and particularly the sigmoid colon were lying somewhat behind the hernial sac. The wall was very thin, the coils of intestines were distinctly visible through it, and one could plainly see the vermicular movement of the intestines. The hand could be passed around the sac everywhere without encountering any adhesions. In fact, one could have lifted the sac and its contents out of the abdominal cavity. On pushing the transverse colon upward the opening in the hernial sac became visible. It was large enough to admit three fingers. Out of this opening emerged two loops of intestines. The shorter one was above, leading up to the third portion of the duodenum, while the lower one, much longer, entered the cecum. Both loops of intestines could easily be withdrawn from the sac. The anterior edge of the opening was thin, consisting entirely of peritoneum, while the posterior edge enclosed the inferior mesenteric vein. The left colic artery was seen arching upward and to the left. The hernial sac was split on the anterior surface from its opening down to the lower point, the incision being arranged in such a manner as to avoid severing the large vessel in the posterior edge of the hernial opening. By splitting the sac the loops of intestines were at once liberated from their confined position, and the hernial sac lay there empty. By tying off separately each half of the divided sac, a complete obliteration of the bag was effected. The posterior wall of the peritoneum remained undisturbed, except where the jejunum emerged. The duodenojejunal fossa was indistinct, and it was at this point that the sac wall was tied off. No other abnormality was found in the peritoneal cavity. The appendix was

normal and was not removed. The stomach duodenum and gall-bladder were also normal.

The following quotation is from Moynihans' book on "Retro-peritoneal Hernia" which I am quoting *verbatim*.

"If in a body with a normal peritoneum one lifts up the great omentum and the transverse colon and pushes over to the right the mass of small intestines, there will be seen on the left side of the duodenojejunal flexure a peritoneal fold. This fold varies in shape and size, most frequently it is semilunar, the thin concave edge looking upward and to the right and surrounding the bowel at the level of the flexure. The upper horn of this semilunar fold is blended with the inferior layer of the transverse mesocolon, and especially at the point where the inferior mesenteric vein passes beneath the pancreas. The larger lower horn is continuous on the inner side with the peritoneal investment of the duodenum and at the outer end with the peritoneum of the transverse and descending mesocolon. In the upper horn, at a variable distance from the edge, lies the inferior mesenteric vein, forming an arch, with the convexity looking upward and to the left. The lower horn is less distinct, composed exclusively of two layers of peritoneum and, at some distance from its free border, one sees the inferior mesenteric artery and its branch, the left colic artery. From the relative positions of these two vessels there results a vascular arch (The "Arch of Treitz") which surrounds the fold in question. Behind this peritoneal fold—between it and the duodenum—there exists, necessarily, a depression or pocket in the form of a funnel, the summit of which is directed toward the duodenum. The orifice of entry is semilunar, limited on the right by the intestine, the flexua duodenojejunalis; on the left by the free border of the fold. This fossa is in general situated on the left side of the third lumbar vertebra. The upper, anterior, and lower boundaries of the opening are formed by the edge of the peritoneal fold containing the inferior mesenteric vein, the plica venosa at the lower part of the neck of this border is generally thickened by a fatty deposit, but anteriorly and above the edge is sharp and thin. The left colic artery is generally closely applied to the inferior mesenteric vein throughout the whole of the anterior portion of the fold, but above the artery inclines upward and a little to the left while the vein arches boldly to the right. At the mouth of the sac there is always seen that portion of the intestine which is leaving the sac to be continuous with the small intestine if any, between the sac and the cecum."

It is in this fossa that the hernia occurred in this patient. The abdomen was closed in layers and the patient put to bed. Recovery was very prompt, and on the fifth day the patient volunteered the information that she is free of all pain. The pain in the lower part of her sacrum vanished entirely. The abdominal wound healed by primary union and she was out of bed on the tenth day. The patient has been heard from since she left the hospital and there has been no return of symptoms.

## TRANSACTIONS OF THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

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*Thirtieth Annual Meeting held at Newark, N. J.*

*September 17, 18, and 19, 1917.*

FIFTH SESSION, SEPTEMBER 18, 1917.

*The President, JOHN W. KEEFE, M. D., in the Chair.*

DR. HENRY D. FURNISS, of New York, read a paper on the

TECHNIC OF URETEROVESICAL ANASTOMOSIS.\*

This paper was illustrated with the aid of a cinematograph demonstration.

### DISCUSSION.

DR. HERMAN E. HAYD, Buffalo.—There are very few subjects that come before the Association of more importance than ureteral injuries. If we tie off the ureter in the course of an operation, no symptoms are evident after the operation. We do not know that the accident has taken place, unless we have tied off both ureters and then we get no urine. The important question to decide is, when shall we attempt an anastomosis or when shall we try to transplant, if possible, the ureteral end into the bladder? I had an unpleasant experience some years ago which I reported in the Transactions in a paper on "Ureteral Injuries." I was very much distressed, and in a rather serious position with the possibility of a lawsuit on my hands as a result of this accident. I had done a vaginal hysterectomy, the woman went through her convalescence and apparently was to enjoy perfect health. In fact, during the whole course of her illness she had had only one-eighth of a grain of morphine and I congratulated myself that the work was very satisfactory indeed. She left the hospital on the fourteenth day and between the third and fourth week she felt something suddenly give way and her underclothing was wet with urine. I immediately anticipated what had taken place, and the question came up what should we do. After a careful examination and the facts were established, I

\* For original article, see page 14.

put myself in communication with Dr. William Mayo and explained the situation. He said that this accident had occurred more than once in his experience and that of others. The grave problem now was to decide whether a woman with one good kidney, which was sufficiently compensated and was doing the work of two kidneys, was not infinitely better off with that one kidney, than to try to transplant the ureter of the injured side, because after a period of five weeks, in his experience, at least, ureteral fistula in the kidney had taken on such atrophic changes that it did not matter, if the ureter was transplanted or not; that the kidney ceased to functionate. In my communication to him, I told him that inasmuch as I had never transplanted the ureter under such circumstances, I would send the patient to him. He replied that he would be delighted to do what he could for me under these circumstances, but he wished to be free to remove the kidney if he thought best. After receiving that advice from him and the frank way in which he presented it, I made up my mind to take the kidney out, which I did and the woman made a satisfactory recovery and is well to-day. As to transplantation of the ureter when injured during operation, it is a very much simpler situation than to deliberately cut down and expose the end of a ureter injured some weeks previously and try to transplant it into the bladder.

I think the doctor has shown us beautifully in the picture how satisfactory it is to go through the bladder, as he has done, with his forceps and then pull the ureteral end into the posterior opening, sew it there and then close up the anterior opening. That is not the method I employed in another case when I had to transplant the ureter. I simply made a hole in the bladder by passing an instrument up through the urethra, making the bladder taut at a point on this instrument which was cut down on, the ureter pulled through and sewed to the edges of the bladder wall.

But the way the doctor has shown us to-day in this paper, I am satisfied, is very much simpler and I am sure decidedly better. It is a big undertaking, however, and a man must have a lot of experience to do the late operation in any case, particularly if it is in a case where you are responsible for the original injury, as that creates a mental hazard.

DR. ALBERT GOLDSPOHN, Chicago.—In the days when vaginal hysterectomy was customary, some women died from an accidental and unknown ligation of the ureter and the cause of death was supposed to be due to something else.

Previous to twelve years ago I also made two implantations of the ureter into the bladder in cases of uretero-vaginal fistula following vaginal hysterectomy, one of the latter by myself and another performed by another surgeon. The incision was made practically as the essayist has demonstrated, the ureter was exposed extraperitoneally, and the approximation made by the method of loosening up the bladder and pouching it out in the desired direction. The doctor's technic of implanting the ureter I think is preferable to what I did at that time. I passed uterine dilating sounds into



the bladder, pouched it out as desired, cut down on it and implanted the ureter, taking care to incise the ostium of the ureter, so that it might not contract but become everted within the bladder, and also taking care to construct something of an extravesical cuff around the ureter at the point of implantation. There was no particular difficulty in these cases and the patients made a good recovery. I am, however, more directly interested in what to do with those cases where we cut across the ureter so high up in the abdomen that implantation into the bladder is not possible. Shall we simply ligate the end of the ureter and drop it? When that is done, it is advisable to tie a knot in the ureter back of the ligature at the end. But how freely may we do this and how advisable are the attempts to transplant the injured ureter into the opposite ureter, or into the large bowel? These latter procedures have been done experimentally, but so far as I know, they have not been successful. It is not advisable and my feeling now is, if I were dealing with a patient where I had no doubt about the normal capacity of the opposite kidney and the patient had about enough operating for that time, as these patients frequently have, where this injury occurs, I would tie the ureter and drop it. These cases are usually desperate, because either some large tumor has to be dug out, or deforming adhesions or cicatricial formations have led to the accident. The opposite kidney will gradually acquire additional functional capacity to serve the patient's purpose. Some of these patients, whose cases have been related to me by colleagues, have passed through the experience without having had unusual pain and happily ignorant of the occurrence. Later on, if there is cause for a nephrectomy, it can be done quite safely in such cases when that additional function has been assumed by the other kidney. But I would like to know from the gentlemen who have had experience with the subject, what their judgment is about this matter, what to do with the cases, where the ureter cannot be implanted into the bladder.

DR. A. B. MILLER, Syracuse, N. Y.—The cases that have been presented have a special interest for me from the fact that I had in my early abdominal work an experience of this character. I think, as has been stated, ligation of the ureter accidentally is of much more frequent occurrence than we have heretofore expected or has been recognized by abdominal surgeons.

One instance which impressed me was a case of abdominal tumor in shape like an elongated watermelon which pressed upon the perineum and extended up to the diaphragm. On opening the abdomen it was found to be an elongated fibroid; the peritoneum was turned down from this immense growth as you would remove your overalls from your trousers. The technic was not difficult and I was congratulating myself that it was one of the easiest hysterectomies I had ever had. Upon returning to my home, as I operated in a neighboring city, I was phoned the next morning that the patient had failed to urinate. I felt there must be some shock and believing that the technic was good, that there was no fear of the ureter having

been tied off. In the night of the second day I received another telephone message. I went to the city and found that my patient had not passed any urine. It was apparent we had tumefaction in the region of the kidney and what to do with it was difficult to determine. The patient, whose general condition was good, was turned over upon the abdomen, as we thought she was going to be worse unless something was done. Cocain was injected into the lumbar region and the kidney cut down upon, the ureter found, the knot separated with relief of the obstruction. The ureter was left to come out of the lumbar incision, and I went home rejoicing, thinking that my patient would at least have one kidney that might be restored subsequently if she failed to have two. Three days afterward I was again telephoned that my patient was doing well, but there was decided tumefaction on the opposite side. I returned to the city and opened up the lumbar region under cocain anesthesia, which was a simple matter. It is not a difficult thing to do; it is readily and quickly done, and you only need a little cocain when the patient is suffering. I cut down on the opposite side and found this kidney had suffered the same injury that the previous one had. This was also relieved. My patient went on to make an uneventful recovery but I wondered what I was going to do subsequently. She returned to her home but pneumonia set in six weeks later and she died.

One thought which actuates the report of this case is the fact of the simplicity by which I was able to reach these ureters through the lumbar incision under cocain and without depressing my patient.

I recall one case in which the ureter was injured by one of our Fellows, the late Dr. Frederick, of Buffalo. He did an anastomosis of the right ureter, bringing the cut ends of the ureter together through a longitudinal incision and succeeded in getting union. I heard him report that case to this Association quite a number of years ago. This woman died of tuberculosis. At the time of her death she had marked necrosis on the side where the injury took place, but lived for eight or ten years after the repair of the injured ureter by Dr. Frederick.

DR. FURNISS (closing the discussion).—I purposely omitted to mention in my paper what to do other than ureterovesical anastomosis on account of the limited time; but I would like to answer Dr. Goldspohn's question as to what should be done when the ureter is injured.

Coffey claims that if the anastomosis is made in the gut in an oblique manner so as to restore the valve-like action to the normal, the results are good. He states that experimentally he has achieved success on animals by such a method, and that the Mayos have operated on a number of cases in human beings with success. If these are successful, as we hope they are, they are the only successful ones on record of implantation of the ureter into the gut, except where the normal orifice is retained as in exstrophy of the bladder. With that experience in mind there is very little to hope for from such a procedure. The point comes up what to do in case of in-

jury to a ureter where you cannot make an anastomosis. If you have a patient with good kidney function on both sides, but in a poor operative condition, I would ligate the ureter and drop it. If I had a patient with good kidney function on both sides and in good operative condition, I would take the kidney out because of the possibility of a ureteral fistula. If the patient was in poor surgical condition and the renal function poor, I would bring the ureter that is involved out on the skin. The patient might be able to get along for a while with a fistula and two kidneys, but not get along with one kidney.

DR. WM. S. BAINBRIDGE, New York, read a paper on

THE INFLUENCE OF PREGNANCY ON THE DEVELOPMENT,  
PROGRESS AND RECURRENCE OF CANCER.\*

#### DISCUSSION.

DR. GORDON K. DICKINSON, Jersey City, N. J.—Yesterday I made the remark that there is a terrible conflict between the germ plasm and brain plasm. We think a great deal of our brain, of our intellect, of our thought. We are proud of a paper such as we have heard this morning from our President, and we sit around and pride ourselves that we have brains enough to comprehend the wonderful harmony of words and the noble thoughts and the facile expressions. We do not know but what Dr. Bainbridge may have written his paper thirty times before he was through with it. At any rate, he did not write it in a hurry. He knew the class of people he was going to read it to. He felt it was an honor and he has lived up to his duty. Like Dr. Bainbridge, we read the old books and we find that the authors thought the same thoughts, had the same ideas, and they knew as much as we do. They looked at things merely from a somewhat different viewpoint.

Over on the other side they are killing people by the hundreds of thousands and millions, and we think nothing of it. We call it patriotism. The biologist has his viewpoint and he shows us that we are here for one purpose and that is to breed children. Another class will tell us that he who does not marry and have children is committing the biggest crime that is known against God. Really, we are conceited. We think we are here for the one purpose. The doctor believes in a sort of germ plasm and not a soul plasm. The latter is for our entertainment, to make life agreeable. We are here to have children. Have we a right for any purpose to destroy children? Let us suppose a woman of thirty has perhaps thirty years more to go and the baby is sick, see what we are doing. We are depriving the world of that thirty years. The biggest things, the most original things are done by people between twenty and thirty. It is the time when they want to think. When they pass thirty they do not amount to much unless it is a woman having a baby. I cannot solve this problem. Should I abort a woman in order that she may have one more baby, or should I allow the baby to go?

\* For original article see page 21.



That baby is far more important in my estimation than the woman, because it is younger.

DR. EDWARD A. WEISS, Pittsburgh.—Regarding so-called therapeutic abortion I have little to offer in addition to the views I expressed in a paper entitled "Some Moral and Ethical Aspects of Feticide," which I read at a meeting of this Association a few years ago. I maintain that it is the duty of a physician to save life, not to take it. This is not a place for a religious or moral discussion, but the profession is open to a great deal of criticism nowadays because members of it are taking upon themselves too much regarding the life of the unborn. If a physician is in a position to say that he can positively save life by inducing abortion then possibly there is some justification for him to abort a woman if the family does not object or if she has no religious scruples. Until such time comes, however, when he can make that positive assertion the physician is arrogating to himself powers to which he has no right.

DR. EDWARD J. ILL, Newark.—When I had the honor of being President of the Association, I put my position very clearly on record. I had at that time never produced an abortion for any condition and I had never regretted it. I have since done it three times. In one instance I sat at the bedside of a woman for forty-eight hours, hoping she would get relief before abortion was done. Another time it was a clergyman's wife; I spent most of a day in the hope of relieving her, and finally we had to induce abortion. The third case has escaped my mind.

I want to speak of the doctor's paper in regard to malignant tumors. A good deal depends upon the nature of the malignant tumor. Let us take a concrete case. A woman is pregnant six months, with a large tumor in the abdomen. On opening the abdomen the tumor is taken out. We find that the tumor is perfectly smooth in outline, absolutely free from any taint of anything else than what we see in the ordinary dermoid. I heard the great Schroeder say at one time that "I remove nothing except for palpable disease." I have never removed an ovary except for palpable disease. Twenty-five or thirty years ago, when ovaries were removed for every sort of thing, I never removed ovaries. In this particular case I saved some ovarian tissue; I always do it when I can. I removed the rest of the tumor and closed the wound up. When we examined the tumor in the laboratory I found it was a papilloma of the ovary. I have seen these tumors again and again, and as long as the growth has not broken through its exterior wall, although a malignant tumor, that tumor is not the subject of local or general infection. This case was operated on two and a half years ago and the woman is well. She miscarried six or eight weeks after operation, which had nothing to do with the operation. She has just been delivered at term of a normal child. That is one form of cancer. The cancer that you see here is an entirely different form of cancer; it is very malignant; I do not know whether producing abortion would have improved this condition or not. The doctor thinks it would. We all know that if a woman has cancer of



the cervix and aborts or gives birth to a child at term, the cancer spreads tremendously. There is no question about it. It will spread just as much if you open the woman's abdomen and remove the fetus through the uterus, either at term or earlier.

DR. JAMES E. DAVIS, Detroit.—There is a peculiar paradox to be considered in connection with this subject that Dr. Bainbridge has brought before us, that is, we all consider that a malignant growth will be hindered in its rapidity if we can bring the patient into the best possible condition of resistance. In other words, if the anabolic processes of the body can be brought to the highest possible point of perfection, we expect that the malignant growth consequently will be slow in its development and in fact there are instances where a malignant growth may cease altogether because of the very marked anabolic resistance of the patient. During the usual conditions of pregnancy we expect the anabolic processes to be as much in the ascendancy as the catabolic processes. This is especially so in the latter months of pregnancy. It does not seem possible to have these patients continue after the conclusion of pregnancy, in anabolic metabolism excepting in the local increase of the malignant growth. At the conclusion of pregnancy then we have a curve indicating catabolic change in the metabolism of the mother. There is now every reason to expect that the malignancy will increase.

One other point may be mentioned which refers to our present method of determining whether a growth of certain cells has reached the malignant stage or not by ascertaining whether the cells have penetrated below the basement membrane. The limitation of the new growing cells decides our diagnosis of malignancy.

Since Dr. Bainbridge has exhibited and praised an old book, I have also profitably consulted and will quote from in my paper of to-morrow, Burn's little volume on "Abortion," which is over 100 years old, yet the anatomy of the subject is here quite as accurately given as in any book published within the last ten years.

DR. J. HENRY CARSTENS, Detroit.—I have had a couple of cases of pregnancy with cancer of the uterus. I operated on one of them before the members of the American Medical Association in Detroit in 1893. I did not know the woman was pregnant. She had a large cauliflower growth, had been flowing for about two months, and I did a vaginal hysterectomy. When I opened the uterus afterward I found a six-weeks pregnancy. She made an apparently complete recovery as after any operation, but died nine months later. I had another case later that was five months pregnant; I removed that also by a vaginal hysterectomy, doing both operations with the clamp, which I prefer, because it cuts off the circulation and does not allow the cancer cells to go into the blood current.

Does the production of an abortion help the woman in such a case as Dr. Bainbridge has reported? If we can show that it will often check the growth of cancer, the woman's life is prolonged and her suffering diminished, I think we are perfectly justified to produce an abortion in such cases, or bring on premature labor, or do as I

did, remove the whole uterus with the malignant growth. As long as we cannot prove it does any good, then certainly it is a grave question. When it comes to a religious question, if I know I can help, I must say that I have no compunctions about producing abortion. I will do it instantly if I know that woman is going to die from pernicious vomiting, or if I know she is going to die from eclampsia, if I do not interrupt pregnancy. That woman may have two or three little children, who need her very much for the next fifteen or twenty years, and if I can save her life so that she can take care of those children, then I will commit abortion.

DR. ASA B. DAVIS, New York.—It has been our observation that pregnancy and the puerperal state complicated by malignant growths, give a very decided impetus to the development of such growths. If these growths are active the patient rarely survives beyond a period of six months after the discovery. Early in our experience, while an interne in a cancer hospital, a case which strikingly illustrates this came under our care.

A young woman was admitted for treatment of abscess of the left breast. Her first pregnancy had been interrupted at about five months, a short time before her application for treatment, she stated. The abscess involved a large part of the breast and extended well up into the axilla. The abscess was freely incised and a large quantity of pus evacuated, with the full expectation that healing would progress as usual after an abscess. There was no idea that we were dealing with malignancy in the case of this young woman. Yet there was no attempt at healing. The disease spread; the breast and axilla were soon an active cauliflower-like growth. The patient was dead in six weeks from the date of her admission, from general carcinomatosis and after great agony.

Other cases have confirmed our belief that whether we abort pregnant women who are victims at the time of malignant disease, or do not do so, pregnancy has given a tremendous impetus to the developing malignancy and the patient is usually dead within six months, very often even sooner.

DR. BAINBRIDGE (closing the discussion).—I knew that the character of my paper was such that it would elicit an excellent discussion, and in it I emphasized certain points with malice aforethought. I spoke not from an experience of having had a few cases, but from an experience that has extended over ten or eleven years at one of the largest cancer clinics in America. I was engaged in collecting for my records something like 12,000 cases of growths of various kinds and making practical deductions until the war interrupted the work.

The deductions I have drawn are not only in accordance with my own experience but the experience of many others as set forth succinctly in the paper.

DR. JULIUS LEVY, of the Board of Health, Newark, N. J. (by invitation) presented

A STATISTICAL STUDY OF MATERNAL MORTALITY AND EARLY INFANT MORTALITY.\*

\* For original article see page 41.

DR. JAMES A. HARRAR, of New York, read a paper on

THE CAUSES OF DEATH IN CHILDBIRTH: A DISCUSSION IN THE MATERNAL MORTALITIES IN 100,000 CONFINEMENTS AT THE NEW YORK LYING-IN HOSPITAL.\*

DISCUSSION ON THE PAPERS OF DRS. HARRAR AND LEVY.

DR. E. GUSTAV ZINKE, Cincinnati.—What I have been able to gather from the essays is this, that the results in the practice of obstetrics in the hands of the man-obstetrician are not superior to those obtained by the ordinary midwife. Am I right? One who has devoted himself to the practice of midwifery for a period of forty years, who has taught the subject annually for a period of twenty-eight years, who has kept his eyes open, and who is willing to make a truthful statement, cannot help admitting that what has been said on this floor this afternoon is only too true. If the obstetrician of to-day cannot claim superiority in obstetric practice over the ordinary midwife, there is something seriously wrong. It is impossible to father the claim that the science and practice of obstetrics are not better taught than in the past. Midwifery has never been better understood, nor better taught, than during the last thirty years.

It does not matter whether those who are engaged in the practice of midwifery in private or in hospital practice be midwives or male obstetricians; the determining factor in this instance is, and always will be, how much does the individual, whether man or woman, who engages in the practice of midwifery, know about obstetrics? And if he, or she, knows all about it, much depends upon the care given the patient. Not every one who understands midwifery gives the patient the full benefit of his knowledge. To be a master in obstetrics, is one thing, to practice it well and conscientiously is another. This will explain in a way, why the end-results obtained in the practice of obstetrics are such as are quoted here to-day. And then there are other reasons for the success of the midwife. When the latter are presented in medical meetings, they are invariably resented by a large, yet influential element in the profession. But let the truth be known in spite of this opposition. The midwife waits far more patiently than the busy doctor. She has no authority to make a version, to use the forceps, or to perform any other obstetric operation. She is loath to call in a physician to assist her in a case for fear she may lose in practice and prestige. Therefore, she waits and gives nature a better opportunity to do the work. True, sometimes the midwife waits, I am sorry to say, too long; but I do not hesitate to state that the results of this waiting on her part are more frequently advantageous to the mother, even though the latter may be, temporarily, a little the worse for the wear. On the other hand, the physician, who is privileged to use the forceps, to turn, or to perform without question or censure, any operation he

\* For original article see page 38.



may select, is apt too often to resort to any of these means simply because he is in a hurry to get through with the case.

And what is worse, there are many practitioners who do not know how to perform a version properly, there are many who use the forceps badly and too frequently, and the same may be said of any of the obstetric operations. The worst of all, however, is, that there are too many men in the medical profession who know little or nothing of obstetrics, who depend solely upon nature or accident, and when they fail to deliver the patient, after attempts to perform a version or to use the forceps, call to their assistance an expert who is expected to assume the responsibility in the case and to endorse the conduct of the attendant.

DR. JOHN NORVAL BELL, Detroit.—I have often wondered how it is that midwives get better end results than the doctors! I think there are two distinct classes of men who do obstetrics, the male midwife and the obstetrician. The obstetrician, I believe, will get better end results than the midwife, but my idea is that the reason for the better end results which the midwife shows is this, that the male midwife is practising all kinds of medicine. He goes from a scarlet-fever patient and delivers a woman; he goes from opening an abscess and delivers a woman. He is engaged in all sorts of work and he does obstetrics. The woman midwife does nothing but obstetrics; her hands are cleaner; she does not infect the patient. There in my mind is the solution of that disparity.

DR. WILLIAM H. HUMISTON, Cleveland, Ohio.—This is a very interesting subject and I think it is one that should be thoroughly understood and talked over, in the hope that we will have better obstetric work done by the male obstetrician. Obstetrics, as Dr. Zinke stated, is very much better taught to-day than formerly. In fact, it is perfectly taught to-day, where it was not twenty or twenty-five years ago, and the reason why the female obstetrician excels over the male is because she waits longer. She does not become impatient; she is not in a hurry. She has not some other case to go to and hurry matters up, apply forceps before the first stage is reached. The practitioner is in a hurry to make the delivery. I have repaired one woman who had extensive laceration of the cervix at the vaginal junction, tearing the perineum down to the sphincter ani. She was in competent hands. She went into a hospital to be confined a week before her time was up. The doctor had been there a few days before and said she had gone over her time and he would induce labor, as it could be done very readily. He packed the cervix and vagina with gauze and allowed the packing to remain in forty-eight hours, then removed it. Labor pains had not started up; he repacked. At the end of thirty-six hours she had a violent chill and her temperature reached 104° F. He did a forcible dilatation of the cervix, delivered a dead baby. The baby weighed 8 pounds. The patient was dissatisfied, and through her friends learned from the nurse that the doctor was expecting his daughter to return from Europe and wanted to be in New York at the time of her arrival on a certain date and therefore he induced



that labor. That is poor obstetrics. He knew better, for we have to be patient in these cases; we have to know enough about obstetrics to know the relative size of the child's head that has to go through the pelvis. We have to determine, as near as we can approximately, when that child can be delivered, and if there is no disproportion between the child's head and the pelvis, we can wait indefinitely, and nature will deliver the child better than we can do by any hurry up process.

DR. GORDON K. DICKINSON, Jersey City, N. J.—The midwife is successful because the law is honored. The young doctor is unsuccessful because he knows there is no law except his own; he is in a hurry; he wants to go home to breakfast, as the chances are he has been out all night. He has other cases to attend to, and until you put the law on the doctor the thing will occur. You can discuss this subject for the next ten years and it will be the same thing.

New Jersey is a rather advanced State in this regard. I am glad you are here to hear about it. We have laws here as to the standardization of the physician. We have a committee connected with the State Medical Society, and have had for three years, looking into the standardization of hospitals, and no one knows better than you or I do that there is no standardization of hospitals at present. The standardization is reached by men on the Board of Managers or a selfish superintendent. The doctor has no say except in a few cases. This committee of standardization at the last meeting of the State Society was called upon to formulate a plan by means of which we can standardize obstetrics in the hospital, because around this part of the country obstetric cases tend to go into the institutions, the poor, the wealthy, and middle classes. I feel that if we succeed in this, we should standardize a proper midwifery department with an institution, and not a man who is merely willing to do it, but an obstetrician, a man who reads obstetrics and studies it, and lives in it, the same as you would a bacteriologist or an x-ray man, make him be responsible for results and report his failures as well as successes. It may be slow; it may take time, but the movement was started, and until you put the law on the doctor as well as on the midwife, there will be trouble.

DR. J. HENRY CARSTENS, Detroit.—Before the discussion is closed, I would like to ask, what is the trouble with the hospitals? The way I interpret what has been said is that the hospitals are as bad off as anything else. Certainly, in a hospital the doctor is not in a hurry. Most of the women that are in a hospital are attended by the house physician and the regular obstetrician, who may have charge of the department, is not always around when these women are delivered. They are delivered under the care of the house physician and that house physician is not in a hurry. Why is it the statistics of the hospital are poorer than those of cases delivered by midwives?

DR. JAMES F. PERCY, Galesburg, Illinois.—We have had two papers on a subject that is usually very uninteresting and yet these papers have been very illuminating and instructive. In Illinois

we have recently started a movement that has for its purpose the improvement of the midwifery question by giving the trained nurses the right to practise obstetrics after being found qualified through an examination by the State Board of Health.

Dr. Dickinson has alluded to a point that must have occurred to all of us when he suggests the supervision of the physician in some such way as the midwife is supervised. I think Dr. Levy is to be congratulated that he has obtained the results that he has reported to us to-day by looking after the work of the midwives. I wish that it were possible for him to put into his statistics the relative quality of the work done by the physicians who have graduated in the last fifteen years as compared with the work along the same lines by the older men engaged in midwifery practice. My own belief is that there is as much puerperal fever as there ever was and it would be interesting to know if this was true in the work of the physicians who have been educated in the recognized modern methods. This question gains additional importance by the remarks of Dr. Harrar in reference to puerperal fever. I hope that the time is coming when every state will have a supervising committee either from the State Board of Health or from the State Medical Society whose duty it shall be to look after the interests of the public not only from the standpoint of good obstetrics but from that also of abdominal surgery.

DR. HARRAR (closing the discussion on his paper).—I have not very much to add to what I have already said. I tried to keep away from detail in my paper and present our general results. You can prove almost anything by statistics if you do not carefully analyze them. For instance our figures might be said to prove that rubber gloves were no good in obstetrics, because on the outdoor service, where we use no rubber gloves as a matter of economy, our mortality and morbidity are better than on the indoor service where we do use rubber gloves. We know this is not the case.

I did not take up the midwife question as I have not accurate figures on which to base any assertion. We get fewer cases that have been badly mismanaged by doctors in the last few years than we did ten years ago. We think this may be because many of the local physicians have had the advantage of the teaching in their attendance at the hospital as students, and have profited by their experience.

Dr. Carstens raises the question about the mortality being higher in hospitals than in private work generally. The reason for this is that the hospital figures unless carefully dissected are contaminated by referred bad cases. The hospital gets the blame for the deaths while the referring doctor or midwife goes free. The deaths from septic abortion and infection are charged up to the hospital and the midwife does not get into trouble.

With regard to a method referred to in the discussion of letting puerperal women with foul lochia "stink themselves out," that might be said to be the principle of our present treatment at the Lying-In Hospital. If there is foul lochia we raise the head of the

bed and let them alone. We no longer douche these women, although the odor may be most disagreeable to both the patient and her attendants. We do not do anything locally. Since we have pursued this course of treatment our mortality and morbidity results have regularly improved.

DR. E. GUSTAV ZINKE, Cincinnati, Ohio.—I should like to add a word or two to what I have already said. From experience in the outdoor obstetric clinic, where not only the surroundings of the patient were filthy in the extreme in many instances, but the patient's body and bed in nearly every case were anything but aseptic, I may say that both the fetal and maternal mortality and morbidity were not bad, in spite of the fact that students of the fourth year were alone in attendance upon these cases. I cannot claim to have had the same success with some of the patients I delivered in homes with the very best environments and those delivered in well-equipped maternity hospitals. This may best be explained, or illustrated, by referring to the often-observed fact that people who live under unsanitary conditions, like those who from the time of birth are accustomed to poor food and impure air and water, acquire a certain immunity from diseases to which others, who have always enjoyed the best of sanitary surroundings, wholesome food, pure drinking water, and fresh air, would readily fall victims.

DR. LEVY (closing the discussion).—In the first place I wish to take exception to the remarks of the gentleman who tried to criticise the statistical evidence of the low maternal and infant mortality in midwifery practice that I have submitted, stating that figures can be easily juggled to prove anything. Progress in the solution of many medical questions can only be made by the use of statistics and it is unwise and unfair, especially for one who reads a paper based upon statistics, to repeat this old cynicism.

It is true that statistics must be used very carefully and that we should try to include in our report all the elements or factors that may have any relation to the subject under consideration; that I have tried to do this can be seen from the data presented in reference to the distribution of primipara and certain nativities in the practice of the midwife. While the figures show a lower mortality among midwife cases, I did not claim that this was due to any superior skill or ability, but clearly indicated that it could be partly explained by several facts that were brought out by the statistical analysis. I did maintain that the facts as far as can be determined from statistical evidence are not of such a character as to warrant obstetricians making the attacks upon midwives I referred to in the beginning of my paper.

The higher mortality in hospital cases I explained as partly due to the higher proportion of primipara delivered there, but I also pointed out that the higher mortality among physicians and hospitals could not be explained away by the old defense that this was due to the fact that midwives send their badly damaged or moribund cases to the hospital as, in a series of puerperal deaths, carefully investigated, we found that only 25 per cent. of the deaths could be charged



to the midwife though they delivered 50 per cent. of the births, even if we held them responsible for every case in which they had been in attendance. I think we will have to admit that women delivered in hospitals are not always attended by superior obstetricians, as a matter of fact the work is frequently done by interns or general practitioners with no special qualification. Some of the poor results may also be due to a lesser sense of responsibility and a greater tendency to experimentation, which I am sure does not always work out to the advantage of the patient.

The purpose of my paper was not to exalt the midwife, but rather to compel those obstetricians who have been hurling the brand of infamy at the midwife to produce the facts upon which their contentions are based so that if they are justified we may all come to the same opinion. It is very important that this question should be settled, because of the statements made by prominent obstetricians, of the desirability of many maternity hospitals to take care of all the cases that now are delivered by midwives, many physicians and laymen are calling upon the community to build hospitals at considerable expense. Those of us who are familiar with the family life of our people look with great trepidation upon any system that removes the wife and mother from the family even for a period of two weeks, and we really feel that there is no better period in the life of the family to develop the solidarity of the family than during this period of childbirth and, therefore, there is a grave responsibility upon all those who urge institutions as a solution of the maternity question.

DR. HUMSTON.—In those cases of puerperal sepsis that happen in the practice of a midwife, and she calls a physician, and the patient lives anywhere from three to twenty-one days and finally dies, does the midwife sign the death certificates or the doctor?

DR. LEVY.—The midwife signs no death certificates. Every death certificate is signed by a doctor. If a woman dies who has been attended by a midwife at any time we charge the death against the midwife and not the doctor.

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SIXTH SESSION, SEPTEMBER 19, 1917.

*The President, JOHN W. KEEFE, M. D., in the Chair.*

DR. J. W. POUCHER, of Poughkeepsie, N. Y., read a paper on

CESAREAN SECTION IN THE PRE-ECLAMPTIC  
STAGE.\*

DR. ROSS MCPHERSON, of New York, read a paper on

THE CONSERVATIVE TREATMENT OF ECLAMPSIA.†

DR. ASA B. DAVIS, of New York, read a paper on

TREATMENT OF ECLAMPSIA.‡

\* For original article see page 54.

† For original article see page 58.

‡ For original article see page 62.



DR. W. G. DICE, of Toledo, read a paper on

THE INDICATIONS FOR INTERFERENCE IN PRE-ECLAMPTIC  
TOXEMIA.\*

DISCUSSION ON THE PAPERS OF DRs. POUCHER, McPHERSON  
DAVIS AND DICE.

DR. E. GUSTAV ZINKE, Cincinnati, Ohio.—The papers just read represent the different ideas entertained with reference to the causes and treatment of this tragic obstetric complication. Owing to the imperfect knowledge of the causes of this disease, the views as to its proper treatment differ widely.

From the beginning of my practice I have been impressed by the earnestness and perseverance with which obstetricians have tried to unravel the mystery of puerperal eclampsia. The disease varies. There are hardly ever two cases exactly alike. In recent years we have more or less lost sight of the fact, which I never fail to emphasize when I discuss the subject, that some of these cases are bound to be fatal from the start and that it matters little what course of treatment we adopt. There are other cases, fortunately, the majority of which are amenable to treatment and a third class which would recover spontaneously if let alone and which, occasionally, recovers notwithstanding the treatment administered. The obstetrician is therefore confronted with a problem which is not easy of solution and no line of specific treatment can be outlined. Much will depend upon the ability, judgment, and dexterity of the attendant and the care he may be able to bestow upon his patient. It will not do to say that operative intervention is the only proper course to pursue in every case; it will not do for us to say that medical treatment alone is to be relied upon; but what we should realize, above all things, is that our greatest usefulness, our strongest weapon to combat this obstetric complication, is prophylaxis during pregnancy. A pregnant woman should place herself under competent care from the beginning of her pregnancy and the conscientious obstetrician, he who devotes himself to his cases, will be able, I am almost tempted to say, to eliminate this disease from the list of obstetric complications. You know I am a firm believer in the efficacy of *veratrum viride* in the treatment of puerperal eclampsia; yet I realize there are some cases which can be reached effectively only by prompt operative intervention. All cases of puerperal convulsions, which are sudden and wholly unexpected in their onset during the period of viability before labor or before obliteration of the cervix and dilatation of the os have occurred, are cases for the administration of *veratrum viride* and the so-called elimination treatment; for *veratrum viride* in full doses, gentle saline catharsis, hot baths, or packs, and an absolute milk diet, will often perform wonders, and end in spontaneous labor and the recovery of the patient. There is only one objection to this treatment, namely, that in too many instances, the baby is delivered asphyxiated or dead.

\* For original article, see page 76.

Toxemia developing early in the course of pregnancy is an entirely different affair. If we fail to improve the patient's condition with the elimination treatment, there is no better mode of procedure than to empty the uterus through the dilated cervix; if the toxemia occurs early in the period of viability, delivery by vaginal hysterotomy is indicated; if the convulsions come on near the end of the term, delivery by abdominal Cesarean section is the proper procedure. If the patient be in labor at the time, labor should be terminated by version, or the forceps, or both. In the latter condition the operation may not save the mother, but the life of the child is frequently saved. I am far from being convinced that the mere emptying of the uterus, no matter how promptly it may be done, relieves the toxic condition.

The last case of eclampsia I was called to see in consultation, was one in which the toxemia manifested itself by swelling of the ankles, puffiness of the face, albumin in the urine, and the presence of renal casts, fully a month prior to term. The patient died of postpartum convulsions; the first seizure occurred ten days after a normal labor at term. This woman was promptly subjected to the elimination treatment; she improved quickly and apparently was entirely well when she went into labor. We believed all dangers were past. Her labor was not a difficult one. The milk diet and elimination treatment were continued postpartum. Yet, at the end of ten days, she had her first convulsion. Within an hour she had another. The fourth convulsion left her a paralytic and she died in coma, exactly twenty-four hours after the onset of the disease. The patient was a primipara, aged twenty-six. How will you explain the result? How might this young woman have been saved? Could she have received better treatment? No. It was one of the cases in which the best of care availed nothing. However, let us not be discouraged. I see a new vista opening up through which relief for this disease may finally come. Slowly, but certainly, the veil of mystery is drawn from the function of the organs of internal secretions and, if preventive measures fail, or have been neglected, we may be able to give relief by the intelligent administration of drugs obtained from the endocrines.

I am not a believer in the administration of morphine, chloroform, brisk cathartics, and frequent and prolonged hot baths or packs. The less vigorous the treatment in these cases, the better. Too many things done at once, or at short intervals, are as bad as, if not worse than, no treatment at all. Statistics show that surgical intervention in this disease has not lessened the maternal mortality in the least. If there is anything to be said in behalf of any mode of treatment in puerperal eclampsia, it is in favor of the medicinal method.

DR. IRVING W. POTTER, Buffalo.—It is very evident that there is no hard and fast rule as yet for the treatment of this condition. It occurs to me, however, that the emptying of the uterus is only one step and I think Dr. Poucher in his class of cases has treated them very intelligently and has obtained excellent results. His class of

cases is entirely different from that described by Dr. McPherson. Dr. Poucher's cases were not all hospital cases. They were scattered and away from immediate medical attention while the other type of cases was in an institution.

We have two classes of cases. One needs fluid. The other does not need fluid. How are we going to determine this? Only by chemical analysis of the blood and urine and if we work along these lines, it seems to me we will reach some conclusion eventually.

I should like to ask one question. Has anybody had any experience with lumbar puncture in postpartum convulsions?

DR. JAMES E. DAVIS, Detroit.—The solution of this subject must come from the domain of physiological chemistry. Much has been said about the pathology of this condition. Attention has been given to the pathologic changes in the liver and the occurrence of cloudy swelling in the different tissues. These changes in the liver are simply the end results from the standpoint of the pathology. The cloudy swelling represents the highest degree of resistance that the tissues can make against the toxic poisoning. We get cloudy swelling in a great number of conditions. For instance, in tetanus poisoning, in trinitrotoluol poisoning, in shell shock, etc. In a great number of conditions we have cloudy swelling in all of the tissues of the body. This representing the greatest possible effort upon the part of the tissues to resist the toxic condition.

The treatment that Dr. McPherson has outlined is indeed very interesting. He begins his treatment by assisting the metabolic processes and then later he continues a treatment which really depresses these processes. However, the use of morphine will do this much: it will prevent the nerve centers from having an explosion which may be the thing that turns the trick at the time it is needed, but this does not appeal to one as the rational way to treat this condition.

Much has been said about the general treatment and of doing those things which contribute to the anabolic changes rather than catabolic changes, and that means the greatest degree of resistance possible is obtained on the part of the maternal organism against the toxic products. It does seem then that relief must come through securing something that will early combat the toxemia which is produced and if we can discover this agent, then the problem will probably have been solved. Until that time, we must continue to aid the forces of resistance by having the highest possible perfection of metabolism contend with this toxemia.

DR. JAMES F. PERCY, Galesburg, Illinois.—I would like to ask Dr. Davis, inasmuch as he mentioned the thyroid treatment in this condition, how much thyroid was given each day in the cases in which he used it, and how long its use was persisted in?

DR. DAVIS.—In the cases of toxemia, where we could give thyroid, we gave 5 grains three times a day of the thyroid extract, sometimes for a period of a week.

DR. PERCY.—That means of the dried gland?

DR. DAVIS.—Yes.

DR. PERCY.—There is confusion in the minds of physicians re-



garding the amount of thyroid in each tablet as put out by the various biological laboratories. I do not know of any "five grain" tablets of the dried gland.

DR. HAYD.—One concern manufactures five-grain tablets.

DR. PERCY.—Yes, of the fresh gland, which is equivalent as they state on their label "to one grain of the desiccated gland."

DR. PERCY.—One grain of the dried thyroid extract three times a day is simply playing with thyroid and you cannot get results with this agent in the prevention of eclampsia by this dose. In the advanced cases of nephritis, puerperal or otherwise, you have to get the physiological effects as quickly as possible and sometimes, though rarely, you have to give 50 grains a day of the dried gland for a period of one or two weeks. If the case does not seem to be urgent I give 12 grains a day of the dried gland for one week and if no physiological effects appear I give 16 to 20 grains a day for another week or until I get the physiological effects. Many of us have forgotten that the older obstetricians taught that the woman, who during pregnancy developed a large thyroid, did not develop eclampsia and that the eclamptic women never had a palpable thyroid. I do not know whether there are any statistics on this subject, but as far as I know this observation has never been disproven. Nephritis and eclampsia are terminal symptoms and their cause exists before any changes can be detected either in the kidney or in the cardiovascular system. When we have headache and inability to think straight, as was mentioned by one of the essayists and in addition, a rising blood pressure in pregnancy, the nephritis is already advanced and eclampsia is always to be thought of as a possibility. One of the best premonitory signs is the retinitis which has been so well pointed out here to-day. In addition to this, a close watch should be maintained of the thyroid gland, in order to determine if possible whether it is functioning normally or not. If it is feared that it is not, animal thyroid substance should be administered. This agent is a most active stimulator of metabolism. It undoubtedly also acts by converting the albumin of the nephritic into urea and as we know, urea is one of the best diuretics.

I am convinced from a rather large experience that in the use of the dried thyroid gland of the sheep, we have one of the, if not the most effective agent that we can use in the early and late stages of the nephritis of pregnancy; but it is of no especial effect in small doses. Our idea of the use of the thyroid gland as a medicinal agent has been influenced undoubtedly by the symptom complex of exophthalmic goiter, but the medical use of the gland, even in the large doses, does not give us the same picture at all. I have never seen any harm come from its use. When the heart beats 120 or more times a minute, or there is a fine tremor of the separated fingers when the arm and forearm are extended, we will know that we are getting the physiological effects that we must have in order to get the results we are after. This is one of the most important subjects that we can discuss. The effects of eclampsia, when it



manifests itself both upon the patient, the family, to say nothing about the attending physician is most tragic, and any light that can be thrown upon its management, no matter how little it is, is worth considering. I believe, however, that the administration of one grain of the dried gland three times a day is ineffective and therefore of no value.

DR. HUGO O. PANTZER, Indianapolis, Indiana.—In a discussion of this disease and, pardon the expression, of our frantic efforts to afford relief in the final stage, we should have in mind the underlying factor, the pathology. The last paragraph in Dr. Davis' paper alludes to this. He says not until we understand the disturbances of physiological chemistry will we be able to obtain guidance for our efforts and unanimity in the treatment of this disease. It is not only a disturbance of the physiological chemistry resulting within the organs themselves, which we must consider, but also the disturbance of function, such as of the endometrium by toxemias and bacteremias, that are seated elsewhere in the body. When we speak of nephritis or of a hepatitis we have in view a definite disease. And yet, toxemia and bacteria that precede and cause them have touched every cell in the body, their effect is not restricted to one or several organs in the body, but prevails, more or less in degree, in all glandular organs and disturbs their respective functions. These disturbances are marked clinically by hypo- and hyperactivity, variously in different cases. With this in mind let us hark back to what our antecedents in medicine have taught us, as for instance, the proverbial saying, a tooth for every child, meaning thereby that a woman in the average case will lose a tooth with every child. In other words, this observation impresses us that toxemias extrinsic of pregnancy prevail with especial force, when the system is taxed with the extra function of pregnancy.

It has been claimed that we should have these women under observation from the beginning of gestation. The same rule holds good for the cases of apoplexy: they should be treated twenty years before the apoplexy occurs. It means rigid prophylaxis to be practised in all humans at all times.

Let us be more observant in detecting and treating vigorously all existing infections. This before and during pregnancy, and before parturition occurs, will advance progress in the knowledge and treatment of diseases in unexpected degree and importance.

DR. J. HENRY CARSTENS, Detroit.—Long ago we found that women who had eclamptic convulsions had a small thyroid and that those women that had the large thyroids did not have any convulsions. I called attention to that fact in the earlier years of my practice, and a good many of my colleagues used to poke fun at me, yet every year or so the same subject was taken up and discussed.

We are told that there are pathological changes in the liver. I have made postmortem examinations and have found that there is congestion of the brain in every one of the patients who died of puerperal convulsions. We also find trouble with the kidney. In other cases we find no change in the kidney. There is something

back of all that and it seems to me, from the discussion we have had here on the ductless glands, that this is going to solve the question. As Dr. Davis has just said, when you give thyroid extract in 5-grain tablets, do you know what is in that thyroid? Are there any secretions that are supposed to bring about the various metabolisms? We know absolutely nothing about it. Until we can get the active principle of the ductless glands or at least standardize them and know how much we can give, we cannot expect any benefit from it so far as I can see. It is not a question whether the thyroid but whether the pituitary produces this change, and the substitution of one kind of secretion for another, the inhibiting or stimulating secretion of one kind of ductless gland by the superabundance of another. These are all questions we have to look into and try to solve and men like Dr. Davis, Dr. McPherson, and others, who have control of large obstetrical practices and have a great many of these cases, may by systematic and thorough investigation in the future be able to show us some way out of it, more so than some of us who perhaps see a case in a year or two or three in consultation which do not amount to much.

So far as the treatment is concerned, I have made use of all the methods. I have used *veratrum viride*; I have used large doses of chloral; I have used chloroform, and in fact, everything that has ever been recommended, one or the other, or all of them together, and I have made use of sections, and so on, and when I saw three or four cases make good recoveries I was pleased; but after I saw two or three more patients die, I became meek and humble. After all these years, I have made up my mind that in the present state of our knowledge treatment really does not seem to have very much effect. If we get a run of successful cases we are lucky, particularly if the mortality is small, and then we may get another series of cases where the mortality is large. But I noticed one thing formerly in my practice and called attention to it a number of times, namely, that women who are troubled early in pregnancy, with a great deal of vomiting, until, finally in the course of the fourth month these symptoms subside, must be carefully watched when they reach the sixth or seventh month. These women are apt to have puerperal convulsions.

DR. JAMES A. HARRAR, New York.—We hear a great deal about "individualization" in the treatment of various obstetrical conditions and particularly in eclamptic patients. Individualization is good, but it must depend upon broad general principles and not be an excuse for letting the desperate condition of a woman befog the obstetrical judgment of the man taking care of her. There is no question but that she is an individual, but remember the rules.

I have been connected with the New York Lying-In Hospital for thirteen years as attending surgeon and have seen during that time a good many cases of eclampsia. In looking up my records I find I have personally delivered twenty-eight cases in the hospital service with three deaths. In no instance did I consider it necessary

to perform Cesarean section. A man who employs Cesarean section in the treatment of toxemia or the preëclamptic stage with good results is a better surgeon than he is an obstetrician. You have time in cases of toxemia to induce labor with bags or gauze packing, and you will leave the woman in better shape, especially for future pregnancy, than by Cesarean section. The maternal mortality after Cesarean section is higher than after induction of labor. In the study of the death reports of the Lying-In Hospital which I have had the opportunity of making this summer, I have not been favorably impressed with the results of vaginal or abdominal section in the treatment of eclampsia.

In studying the case histories of eclamptics at the Hospital, I find that the shorter the elapsed time between the first convulsion and the delivery, the better the prognosis for both mother and child. If the patient does not promptly deliver herself it is proper to help her along, but only by methods that do not infect tissue or increase shock. I do not believe in accouchement forcè or in a cutting operation to hasten delivery in eclampsia.

Since watching the use of morphine as carried out by Dr. McPherson, I am convinced that the results are, on the whole, good. In a long series of cases reported from the Rotunda Hospital, they have had 8 per cent. mortality by the use of the morphine treatment. Our results in a short series approach those. As to the cause of eclampsia, we know little or nothing. It is at least toxemia, but it is not an acidosis. According to the laboratory investigations of Losee and Van Slyke, acidosis is a negligible factor as proved by the examination of the blood in eclamptics.

As to the anesthetic used, we know chloroform is bad. Nitrous oxide is also bad, because it temporarily raises the blood pressure and might precipitate a cerebral hemorrhage. Dr. Losee, pathologist at the Lying-In Hospital, tells me that in his autopsies, cerebral hemorrhage is present in almost all women who die of eclampsia. Of course with a hemorrhage in the brain it does not matter how we deliver, the patient will die anyhow.

DR. ABRAHAM J. RONGY, New York.—It seems to me, that as long as we do not know the etiology of eclampsia, we will be unable to institute correct treatment for this condition. In the treatment of eclampsia we cannot lay down a general rule to be followed in each and every case. It is just as bad to adhere to the conservative plan of treatment advocated by many obstetricians as it is to follow the radical method advocated in many well-known clinics. However, any plan of treatment for all cases will result in the saving of a certain number of patients.

Now what can we do from a clinical standpoint to guide the physicians in general practice, as to what form of treatment they should adopt in a given case? Personally, I have three cardinal symptoms which guide me in the treatment of a case of eclampsia.

1. If the onset is acute and the convulsions frequent and no lucid intervals between convulsions.
2. If the patient is catheterized and very little urine is obtained.



3. When the peripheral circulation of the patient is disturbed, the skin presenting a mottled appearance.

Patients presenting the above clinical picture are very toxic and have to be dealt with very promptly. The uterus has to be emptied. If it is in the early period of pregnancy, vaginal hysterotomy will probably be the operation of choice. If it is in the latter period of pregnancy abdominal Cesarean section may be employed. If, however, a patient is seen in whom the attacks are not so acute and there are lucid intervals between the attacks and the kidneys are more or less functioning, as evidenced by the amount of urine obtained on catheterization, we can temporize and treat them conservatively.

Cases of eclampsia, like cases of typhoid fever or pneumonia, cannot all be put in the same category and be treated alike.

Regarding the treatment by thyroid extract as pointed out by Dr. Percy, I feel that this form of therapy has not materialized as some of us have been led to believe by those who use it extensively.

As to Dr. Potter's question in reference to lumbar puncture, we have two cases of postpartum eclampsia in whom spinal puncture was performed. So far as we could determine there was no perceptible effect upon the convulsions.

DR. ZINKE.—What was the mortality?

DR. RONGY.—One died and one recovered.

I think you will agree with me that rational therapeutics must go hand in hand with a rational pathology. We have waded through pages and pages of literature on this subject only to find that since 1839 when French and English physicians detected albumin in the urine of eclamptics, until the present day there has been a controversy going on in regard to the pathology of this condition and its treatment. In the matter of theories, there has not been a field in medicine that has developed such originality, such patience, such investigation, and such thoroughness and such prodigality of ideas as puerperal eclampsia, and it is the same to-day as it was fifty years ago. In the early years of practice I saw many eclamptic cases which were largely attended by German midwives. Each woman attended an average of one hundred cases of child-birth a year. I had several cases of puerperal eclampsia that these midwives attended among the 600 cases of confinement annually cared for by them and also among my own patients so that I saw in the earlier years of my practice more than the average number of cases of eclampsia.

We were at our wits ends to what to do for these women. The treatment in the main did not answer the purpose. We early discovered that a great many of these women recovered under any treatments; a great many of them died under all treatments. Some of them recovered under no treatment and some of them recovered under bad treatment. It was a question as to what course to pursue in the individual case.

For many years we have tried to have supervision of our patient from the time of her known pregnancy until that condition ceases, and we think it is the duty of the obstetrician, the everyday man, not



the scientific specialist, to do what he can for them during that time to obviate, so far as possible, what may take place afterward. One man will tell you that he has had success with one form of treatment, and another will claim that he has achieved success with a different treatment. The question arises, what was the condition of the kidney in one case and what was the condition of the kidney in the other case? One practitioner may have a case to deal with in which he has the kidney of pregnancy, which is an enlarged kidney, and the termination of pregnancy will avert death, while in another case it does not. When we were called in the earlier years to see a woman in puerperal convulsions, we examined the condition of her heart and pulse and if the indications warranted we bled her 10 or 20 ounces. Under that treatment some of them recovered and some died. Our course was guided by these three cardinal points: first, control the convulsions; second, eliminate the poison, and third, terminate the pregnancy. That was done years ago and we are doing it to-day. Unfortunately in those days we practised medicine before the advent of aseptic surgery. We did not dare do Cesarean section. Up to that time, 1868, there was not a single recovery from Cesarean section in the Hotel Dieu of Paris. We stood at the bedside and looked at the livid and distorted countenance, with stertorous breathing, until almost in sheer desperation we did what has been characterized as bad treatment, we terminated pregnancy largely by manual dilatation and version. Now, that may have been a bad procedure, but it was the best thing we knew at that time. In multiparæ, dilatation can be done very easily. I think we were among the first in America to do it. We do know that we had patients get well, although some of them died. In carrying out of the first principle of treatment, namely, controlling convulsions, Dr. Zinke says that chloroform is dangerous; that it induces a condition that may precipitate death. Maybe it does, but we used it largely in the early days. The fault in its use was that we gave the woman chloroform after the convulsion and only got its effects when the woman was quiet. We did not get the effect from it during the convulsion. We made use of the various emunctories to eliminate the toxins. What is the toxemia? One man tells us it is a uremia. It has been proven that women get puerperal convulsions and have no albumin in the urine. I have had more than one such case. Of course, it is a matter of my own experience; it may not be yours. Other men tell us that there is a hepato-toxemia and the postmortem examinations show evidences of the same. There are hemorrhagic foci in the liver cells; small points of necrosis, sometimes large, and a condition of acute hepatitis or acute yellow atrophy. There is a deficiency in the excretion of something and we call it a toxemia. But unfortunately, a woman, as soon as she becomes pregnant, becomes a regular factory for toxins and every woman should be watched, no matter whether she has albumin in the urine or not. In those women who present symptoms of toxemia, it seems to me that there are various things that we can do. I do not know what is meant by expectant treatment to tide the

woman along, except to meet such symptoms as they arise. If you try to get rid of the poison in any way, do it with your hypercatharsis or diaphoresis. We used to place these women between two rubber sheets, insert a rubber rectal tube, irrigate with hot water and get them to sweat. We would give them croton oil when they could get it down and also veratrum viride.

For a great many years I have resorted to the induction of labor in any woman who has a large amount of albumin in her urine with casts, who has any other symptoms, such as cephalalgia, vomiting, or nausea, disturbance of vision, or any mental disturbance at all. I induce labor in such cases at the seventh month. In doing that we had some children that lived and we had undeveloped children who died. But I know if I were called to a woman seven months pregnant in this condition I would induce labor and not rely on Cesarean section. If, however, I was called on during eclampsia, with an undilated os, I would resort to Cesarean section. The treatment of the disease depends upon whether you are called in the antepartum, intrapartum, or postpartum stage, and it differs in all cases.

DR. POUCHER (closing on his part).—I have been very much interested in the papers of Drs. Davis and McPherson and if I were a practising obstetrician I think I would be enthusiastically in favor of prophylaxis; but I do not want you to understand that I am an enthusiast for abdominal Cesarean section for puerperal eclampsia, for I am not, because you will notice I cited two Cesarean sections in this series of twelve cases during the eclamptic stage. Both of these were cases in which delivery by any other means did not seem possible to me.

My series of preëclamptic operations were principally done with a view of preventing convulsions.

In regard to Dr. Percy's reference to treatment with thyroid extract, one of my seven preëclamptic operations was done upon a woman who was suffering from severe hyperthyroidism with a goiter.

DR. MCPHERSON (closing on his part).—The title of my paper was "The Conservative Treatment of Eclampsia." The word "eclampsia" means *convulsions*. In other words, the treatment of a pregnant woman, or recently pregnant woman, suffering from a convulsive toxemia. The paper did not apply to women having the toxemia of pregnancy which is nonconvulsive, to hyperemesis or any predelivery toxemias, with the exception of the one class which comes to us in convulsions and which we have to treat at that time. I firmly believe that a large number of these cases can be prevented by careful treatment beforehand. I do not think there is any argument about that. But that was not the subject of my paper. My paper was the treatment of the case after it had happened and as I stated to you, it was simply a report of what had taken place in fifty-five cases taken as they came, every one of which was in convulsions when first seen and the results I have given to you for what they are worth.

You may say you do not believe in treatment by morphine, but

the figures of the cases treated by this only show a certain thing and it is up to the men who say they do not believe in the morphine treatment to show us that their cases treated in the other way do better. I believed for a long time that the use of morphine was wrong, but I believe now from what I have seen of these fifty-five cases that I was wrong instead.

Of course, we have heard a good deal about pathology and the modern treatment directed by the pathology. I stated in the paper that it was only possible to get at a final solution by understanding clearly the etiology; but we cannot stand around and let these women die simply because we do not know the etiology.

To recapitulate: the best figures which have been produced in this country in the treatment of women suffering from convulsions at the time they were about to give birth to a child, a condition commonly known as eclampsia, up to the time I reported the present series, have been produced by the Sloane Maternity Hospital in the last 15,000 cases, where the maternal mortality was 14 per cent. It was something like 28 per cent. before and there they have used a modified conservative treatment. In my series of cases the mortality has been reduced to 9 per cent. by simply extending the same treatment a little bit further. I am perfectly willing to admit that you will occasionally see cases which you must deliver, but what I am particularly interested in is that we want to consider assisting labor by means of dilatation with bags or packing, and not rush in and do rapid accouchement forcé and shock a patient who has already been shocked to a marked extent from which she may or may not recover. That is the only point in the paper. I do not believe the treatment I have advocated is a panacea. I do not believe there is any such thing in medicine as a panacea. If you take the fifty-five cases I have reported, and those of the Rotunda Hospital from 1903 to the present time, covering a period of fourteen years, where the mortality was reduced to 9.5 per cent., together with the reports of other men who have had opportunity to see and treat similarly other cases, you will find the treatment I have presented is of a great deal more value than any other method we have at the present time.

One other point came up in regard to the question of lumbar puncture, and Dr. Rongy spoke of it. I have two cases in which lumbar puncture was resorted to in postpartum eclampsia, one of which proceeded to get well after the lumbar puncture.

DR. CARSTENS.—How many of these fifty-five cases were primiparæ and how many multiparæ?

DR. MCPHERSON.—I cannot tell you offhand, but a large majority of them were primiparæ because the greater number we have are primiparæ.

DR. DAVIS (closing on his part).—I wish to call particular attention to what I believe is a real danger in continuing pregnancy in the presence of pronounced toxemia. That is, the danger of establishing a chronic nephritis by prolonging the excessive demands of eliminating irritating material by the kidneys and very probably



also producing permanent injuries in the liver. We not infrequently resort to venesection with good results, reserving its use until after delivery, when we know that there will be no other loss of blood.

I believe that further light will be thrown upon this subject of toxemia of pregnancy through increasing knowledge of the workings of the ductless glands. We know already how potent the extracts of some of these glands are. Until they are better understood there is great danger in their general use.

I believe the eclampsia poison is a complex one. It is too much to say that obstruction of the intestinal contents occurs, but there must be a slowing of its passage through the gut—a stasis—and with this stasis, decomposition occurs. This decomposing material finds ready access to the liver through the portal system. The liver above all the other viscera, is the organ where we invariably find the greatest destructive changes at postmortem examination in eclamptics.

DR. DICE (closing).—I realize that my paper would appeal more to the men in general practice than to surgeons who see these cases when they have already had convulsions. It is in the prophylaxis of this condition that we must have the best treatment. Many of you men who are not in the active practice of obstetrics naturally do not see these cases until they are brought to the Hospital, or until you are called to see them in convulsions. My plea has been for a careful observation of these cases beforehand and I simply called attention to the symptoms which, after rest and elimination and other treatment have been instituted, indicate that we are near the end of the waiting period. Personally, I would hesitate to do or to advise Cesarean section simply for preëclamptic toxemia. It seems to me, that in a large majority of cases we will get better results by inducing labor, so far as the future health of the patient is concerned, a more gentle means.

DR. A. J. RONGY, of New York, read a paper on

ECTOPIC GESTATION, BASED UPON A STUDY OF ONE HUNDRED CASES.\*

DISCUSSION.

DR. A. B. MILLER, Syracuse, N. Y.—I have operated on quite a number of these cases as soon as they came under my observation, a thing I would not do at the present time under all circumstances. I operated on nearly 100 cases, and my mortality was *nil* until I reached ninety, then I had two deaths following each other, associated with complications outside the ectopic, toxic conditions which would produce fatalities regardless of interference with ectopic gestation. I am glad that a man like Dr. Rongy, who has an opportunity of drawing conclusions, feels that in the great majority of cases coming under observation, the condition of shock from immediate operation has very little to do in producing fatality, be-

\* For original article, see page 86.



cause subsequent treatment with the use of salines and transfusion, even if these women seem to be practically pulseless, will bring them back, and the majority of them do recover. Of course, with our more conservative methods of surgery and experience, we find there are many cases of ectopic gestation that come under our observation, where hemorrhage has taken place before they are reached and the patient's condition has improved. These cases do not demand immediate operation; but instead of waiting to find out whether it is one of the fatal forms of ectopic gestation, and permitting them to die under observation, I think the mortality would be less if surgical intervention was resorted to.

DR. JOSEPH H. BRANHAM, Baltimore.—I have had about the same number of ectopic pregnancies as Dr. Miller, and I have had the same number of deaths. In my two cases the deaths occurred from delayed operation. These patients were not brought to me until in one case two weeks had elapsed from the time of rupture of the tube and in the other about ten days. Considerable hemorrhage had taken place, and these women became thoroughly septic before operation through the decomposition of the blood. They died from this septic condition which was caused by delay.

What I want to call the attention of the Association to, is a very simple thing. I suppose other men have tried it but I do not believe any one spoke of it. I was called to come in haste to a consultation on a woman who had all of the symptoms of extrauterine pregnancy, but had evidently bled about her limit. This woman was entirely pulseless and had all the symptoms of extreme internal hemorrhage. She had to be taken to the hospital where she could be operated on. I put a large pad over the abdomen which was lax and bound it up very tightly. I put on external pressure to such an extent that it would exert pressure in the open vessel and stop the hemorrhage. The woman recovered sufficiently to have a successful operation done. Putting such pressure over the abdomen in these cases while getting ready for operation is advisable and I do not believe that it ought to be delayed longer than to stop the probable immediate hemorrhage by some method of this kind and get the patient to a suitable place for operation.

DR. G. VAN AMBER BROWN, Detroit.—While at the Johns Hopkins Hospital some years ago with Dr. Kelly, I saw him remove from the abdomen, a large, full-term fetus, and in reply to a question Kelly laid down this rule, that if the fetus had recently died, there would be considerable hemorrhage in removing the placenta, and the case should be absolutely left alone and drained. If the fetus had been dead for some time, you can remove the placenta quite safely.

I have had some few cases of extrauterine pregnancy and I presume I had one experience which no other man has had, namely, in one morning three successive cases of extrauterine pregnancy. The first case was one of rupture in which the diagnosis was clear. A second case came to the operating room, and after the patient was under the anesthetic I made up my mind I did not know what was the matter, and that I had better study the patient further so

she was returned to the ward. In the third case we had no suspicion of extrauterine pregnancy. The first and third cases that were operated upon got along nicely.

It is the second case that I wish to describe more in detail. After I left the operating room one of the interns, a big forceful, rough sort of individual, took it upon himself to examine this woman, and while I was operating on the third case the message was brought to me that the other patient was in a bad condition and that I should come to the ward as soon as possible. I was surprised to find that it was not the woman I had operated on first, but the woman whom this intern had examined and sent back to the ward. She was dead. We found a rupture with an eleven weeks' fetus free in the abdomen. That woman died, the result of a rough bimanual examination, within an hour.

About ten or twelve years ago I assisted in an operation on a left tubal pregnancy. Two weeks later that woman had to be operated again for an extrauterine pregnancy of the other side which existed at time of first operation, showing the importance of examining both tubes.

This summer, while operating on a patient in shock, with the abdomen full of blood and not in good condition, I felt I should examine the other tube and found that the woman was pregnant in the other tube.

As to the treatment, it seems to me there are cases in extreme shock which should not be operated forthwith, and I believe that we have a good lesson taught in the report of the 227 cases in extreme shock treated by Dr. Polak. He lost four cases. One died of accidental hemorrhage and three from septic peritonitis. His treatment is first to put the patient in the extreme Trendelenburg posture and next to give small doses of morphine, count the pulse every fifteen minutes, watch and see if it is improving. Do not give salines or stimulants. Then when the pulse has come down to 120, and the pulse pressure is 115, the patient is in fairly good condition for operation. Do not manipulate the abdominal organs too much; just take out large clots of blood and put in a quart of normal saline solution. With that method he has saved 223 out of 227 cases.

DR. J. HENRY CARSTENS, Detroit.—It seems to me, the following lesson is taught by the paper: when you have a case of extrauterine pregnancy the other tube ought to be removed and the woman sterilized. A good deal depends upon the case, however, and if a woman has had children before, there is excuse for it. If I have a case of extrauterine pregnancy to deal with and the woman is anxious to have children, I would not say every case ought to have the two tubes removed.

So far as operating in profound shock is concerned, we must judge each case individually; at the same time, I did operate in profound shock and thought the woman was dead when I operated. All I did was to put on a clamp, stop the hemorrhage, left the instrument sticking out and delivered the woman the next day.

DR. RONGY (closing).—The reason for bringing this report before the Association is not so much for the purpose of bringing out a discussion on the immediate or deferred operations for ectopic gestation, but to take the opportunity of reporting the cases of repeated ectopic pregnancies and in this way collect a large number so that we shall be able to decide how to treat the tube on the other side.

I believe that the majority of surgeons do not delay to operate in cases of ectopic pregnancy.

Referring to the question raised by Dr. Ill as to instrumental interference, I wish to state that three of our cases were brought into the hospital in shock and collapse because of an attempted curettage at their homes by family physicians. In other words, as soon as the doctor began to pull upon the uterus the patient complained of pain and collapsed while on the table.

What to do with the placenta in cases of advanced secondary abdominal pregnancy is always a problem. In the case above cited the placenta was dry, hard and shrivelled and therefore it did not bleed. In other cases which were operated my rule has been as follows: When the placenta is attached to a flat surface, like some part of the pelvic cavity, I remove the placenta and pack the space occupied by it very tightly. When the placenta is attached to coils of the small intestines or to a portion of the large intestines, my rule is to leave the placenta alone, hoping that it will gradually slough away.

I believe Dr. Carstens misunderstood me. I said that in those women who have had three or more children, the question of removal or resection of the other tube should be considered. I do not believe that it ought to be done in a woman who has never had any children.

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## TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

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*Meeting of Tuesday, October 9, 1917.*

*The President, DR. HIRAM N. VINEBERG, in the Chair.*

DR. FRANKLIN A. DORMAN reported a case of

### LAPAROTOMY FOR FULL-TERM ECTOPIC GESTATION.

THE patient, Mrs. M., was admitted to the Woman's Hospital, April 4, 1917, because of a moderate toxemia complicating her pregnancy. The urine contained albumin and a small number of hyaline and granular casts. Notwithstanding the usual dietary and rest treatment the patient improved but slightly. The blood pressure continued moderately high, systolic 158, diastolic 108. With the exception of an early miscarriage the patient's previous



history was negative. Her last regular period occurred in August, 1916, and since then she was troubled with nausea and vomiting; there was also occasional spotting of blood.

After three weeks in the hospital without any relief from the toxemia and because of the presence of several fibroids in the lower uterine segment it was determined to deliver the patient by Cesarean section. The operation was done on April 25th, apparently within one week of term. The abdomen was opened in the median line midway between the ensiform and pubes and a tumor was exposed to which the omentum was slightly adherent. Further exploration showed this mass to be an ectopic sac and after incising the fetal membranes the child was extracted. Profuse bleeding followed but the sac was rapidly freed by ligature from its omental adhesions and delivered. It was found to be connected with the right broad ligament. Examination of the uterus showed it enlarged to the size of a three months' pregnancy and containing four large fibroids on the posterior wall. A pedunculated fibroid about the size of a small grapefruit was attached to the left cornua and a smaller one to the right. The uterine mass with its attached tumors was removed by clamps and ligature, leaving only the left ovary and cervical stump. The broad ligament wound was sewed over with a continuous plain catgut suture and after all bleeding was controlled, the abdominal incision was closed in layers.

The fetus was moderately asphyxiated but responded to stimulation. It weighed 6 pounds 14 ounces, and presented a slight talipes calcaneus. The fetal sac was evidently made up of the two layers of the broad ligament. The final diagnosis was that of a full-term extrauterine pregnancy of the intraligamentous variety complicated with uterine fibroids. A subsequent microscopical examination of the tubes showed the presence of decidua, an evidence that pregnancy probably originated at this site. The patient made a normal convalescence and was out of bed on the twelfth day. On the fifteenth day the temperature rose to 101.4° F., and the patient developed a left femoral phlebitis. This subsided satisfactorily and on the twenty-seventh day mother and child were discharged.

#### DISCUSSION.

DR. JOHN O. POLAK.—I would like to ask, what was the location of the placenta?

DR. ASA B. DAVIS.—I have seen five cases of this kind—four of them at full term or over, and one at about five months. Three were operated upon by other members of the attending staff at the Lying-In Hospital. I operated upon the other two cases, one at five months in which the sac was removed intact. The other case was more than full term, septic, with a dead fetus. I have recently reported this case in full.\* The infective organism was the streptococcus viridans. The sac was thick and adherent to the abdominal parietes, with the placenta low down in the right side of the abdomen, adherent

\* *Bulletin Lying-In Hospital*, N. Y., May, 1917.



to the cecum and neighboring structures. The fetus was removed and the cavity packed; the placenta was allowed to come away piecemeal. Although the patient's condition was precarious for some time, she ultimately recovered with a closed wound in about three months. The other three full-term cases were not septic. In all, the sac was adherent to the abdominal wall. It was separated and removed in each case. One patient died of shock almost immediately after operation; the other four mothers recovered, and one child lived. In one case the left ureter was severed during the operation. A urinary fistula followed, with later a nonfunctioning atrophied kidney on that side. One symptom which others have repeatedly noted in such cases was present—undue abdominal tenderness upon palpation.

DR. FRANKLIN A. DORMAN (closing).—I was fortunate in this case from two points of view. The first was that through a mistaken diagnosis I happened to get into the abdomen; the second was to have a case with so few adhesions. I have seen three or four cases operated on and they all presented many adhesions. This case had moderate omental attachments which were very easy to tie off and separate. The placenta was diffuse and on the inner lateral aspect, posteriorly and over the top it helped to form the sac wall. It all came out. Both sides had a smooth appearance like the fetal surface of the ordinary placenta, but it was very diffuse and irregular. The pain and abdominal sensitiveness was a prominent symptom.

DR. ASA B. DAVIS presented a report of

#### TWO CASES OF RUPTURE OF THE UTERUS FOLLOWING CESAREAN SECTION, WITH LIVING CHILDREN.

CASE I.—Mrs. E. P. (C.N. 22525), aged twenty-three; para-i; Russian, was admitted to the wards of the Second Division of the Lying-In Hospital, July 9, 1912, at 10 A. M., at full term, in active labor. She stated that labor had been in progress since five o'clock that morning; that she had been visited by a private physician who, on account of her small stature, did not make a vaginal examination but advised her to go at once to the hospital. Her last menstruation was Sept. 19, 1911; expected full-term pregnancy June 26, 1912.

The patient was of small stature, with very thin muscles, but without any dwarf or rachitic characteristics; erect and healthy in appearance. Nothing noteworthy was found in her eyes, teeth, joints, heart, or lungs. Forcible uterine contractions occurred every three to five minutes. The fetal heart was heard in the right lower quadrant of the abdomen.

Pelvic measurements were as follows: spines, 23 cm.; crests, 27.5 cm.; depth of symphysis, 5 cm.; internal diagonal conjugate, 10.5 cm. with a relatively high promontory.

The cervix was high in the vagina, central, 3 cm. long, and soft; not dilated enough to admit the tip of the examining finger. Membranes were intact. The vertex presented in the right occipito-anterior position. By pressure upon the fundus, the head was felt to impinge upon the high sharp promontory of the sacrum and

could not be engaged in the superior strait of the pelvis. Trial labor was continued unsuccessfully until 3 P. M.—five hours after admission and ten hours from the onset of labor. Delivery was then done by abdominal Cesarean section through a midline incision 8 cm. long, from above down to the umbilicus.

The placenta, which was high on the posterior wall of the uterine cavity, was separated and removed with the membranes intact, except the opening through which the child had been delivered. The uterine wall was very thin and relaxed, allowing profuse hemorrhage from the placental site for a short time. Uterine closure was by two layers of sutures. The first layer was No. 2 chromic gut, interrupted, passing through the entire thickness of the uterine wall and about 1 cm. apart. The wound and deep suture ends were buried by a No. 1 chromic continuous suture, using the Cushing stitch. Each deep suture was tied as soon as it was in place, thus favoring uterine contraction to control hemorrhage. The abdominal wall was closed in three layers.

The puerperium was uneventful, highest temperature 101.8° F. There was sufficient flow of urine. During the first four days it was acid; sp. gr., 1018; urea, 2.2 per cent.; marked trace of albumin (blood), with many hyaline and granular casts. 99.5° F. was the highest temperature.

The abdominal sutures were removed on the seventh day, showing primary union in the wound, the uterus involuting well, slightly tender, partly movable, and the fundus 11 c.c. above the symphysis. The patient was allowed to sit up in a chair for a short time on the eighth day. She left the hospital at her own request on the eleventh day, in good condition, nursing her child, which was gaining.

*Second Pregnancy and Subsequent History.*—This patient applied again for care through her second pregnancy and confinement, November 23, 1914. She stated that her last menstruation was April 9, 1914, making her full term January 13, 1915. Her health was good, except for occasional slight headaches and edema of the ankles. She lived at considerable distance from the Hospital, in Brooklyn, making it difficult to keep her under close observation, therefore she was advised to enter the hospital before full term.

January 15, 1915, at 2.00 A. M., she was suddenly awakened from sound sleep by a violent cramp-like abdominal pain. Her husband secured a taxicab and hurried her to the Lying-In Hospital, where she arrived at 3.00 A. M., one hour from the onset of her pain (C.N. 29691). Respiration had ceased and no pulse could be felt at the wrist. Dr. Davis saw the patient at once. Feeble respiration had begun. There seemed very little hope that life would continue more than a few minutes. All haste was made in preparing and sending her to the operating room. The House Surgeon, an assistant, and two nurses were assigned to giving oxygen, stimulation, and saline solution into an arm vein, resulting in slow response by the patient.

The abdomen was opened through the former Cesarean scar. It was found to be full of dark fluid and clotted blood. A dead full-term fetus and placenta were found in the abdomen and removed. The contracted uterus was raised up from the lower part

of the abdomen. It showed the former uterine Cesarean wound recently torn open through its entire length, leaving ragged thin edges with much adjacent scar tissue. This opening was cut back freely to sound muscle and the uterine wound was closed in two layers as in the former Cesarean operation. The abdomen was closed in three layers.

The patient's condition improved. Her pulse was of fair quality and 130. The fetus weighed 3200 grams. Recovery was progressive and uneventful. The highest temperature was 100.8° F. for a short time on the third day. The remainder of the time it was normal. The pulse range was between 100 and 80. The urine shortly after operation showed albumin with many hyaline and granular casts. This condition promptly cleared up.

*Blood Examination.*—January 15, 1915, the day of operation. Red cells, 2,000,000; hemoglobin, 44 per cent.; leukocytes, 15,200; polynuclears, 77 per cent.

January 29, 1915. Red cells, 2,800,000; hemoglobin, 50 per cent.; leukocytes, 10,400; polynuclears, 67 per cent.

The abdominal wound healed by primary union. The uterus involuted well, and the patient was discharged in good condition on the fourteenth day after operation.

*Third Pregnancy and Delivery.*—Early in 1916, this patient moved to a city in the Middle West. In December of that year, she wrote that her last menstruation was October 27, 1916 and that she was again pregnant. She was advised by letter to place herself at once under the care of an obstetrician in her town, whose name and address were sent to her. No more was heard from her until she appeared in Dr. Davis' office June 23, 1917. She had every appearance of good health and stated that she had had no medical care. She was admitted to the wards of the Second Division, Lying-In Hospital, July 5, 1917 (C.N. 37558) to await her third delivery. The vertex presented L. O. A. above the pelvic brim. Fetal heart, 140, left and below. No evidence of nephritis could be found.

July 7th, two days after admission and twenty-seven days prior to calculated full term, at 10.00 A. M., she complained of headache, slight dizziness, and backache. She was not otherwise conscious of beginning labor, yet uterine contractions of fair force were observed every five minutes. No vaginal examination was made. She was prepared and at once delivered by Cesarean section of a living male child which weighed 2570 grams. The abdomen was opened through the former Cesarean scar. A few omental adhesions were found around the former abdominal wound. The uterus was moderately rotated to the right. A few small web-like adhesions were found on the anterior uterine wall. The old uterine scar was found after considerable difficulty. It was apparently as thick and strong throughout as the rest of the uterine wall. The uterus was opened through the scar. The placenta was found under the entire length of this opening. It was torn through and the child was delivered by breech extraction. The uterus contracted well, and the loss of blood during the entire operation was considerable. The placenta and membranes were removed, the edges



of the uterine opening freely trimmed back. Macroscopically, the material removed showed very little cicatricial tissue. The technic followed was the same as that of the first delivery, with the addition of a continuous suture of plain catgut just exterior to the endometrium.

*Blood Examination After Operation.*—Red cells, 3,160,000; hemoglobin, 60 per cent.; leukocytes, 18,400; polynuclears, 87 per cent.

*Pathological Report on Tissue Removed from the Edges of the Uterine Wound.*—Laboratory No. 770-17. "Microscopical examination of tissue removed from the edges of uterine scar shows that the myometrium is infiltrated in certain areas with round cells and some syncytial cells. Decidua is also observed. The tissue in the line of former incision is not observed. J. R. Losee."

The abdominal sutures were removed on the fifth day, primary union present. The uterus was low in the abdomen, freely movable, involuting well, and very slightly tender. The puerperium was afebrile and uneventful. No sign of nephritis was found. The patient sat up in a chair for a short time on the eighth day. She nursed her baby, which was progressively gaining. Mother and child were discharged from the Hospital on the eleventh day postpartum.

CASE II.—Mrs. T. P., Russian, para-iii, was admitted to the wards of the Second Division of the Lying-In Hospital as an emergency case, December 31, 1909 (C.N. 16873) in labor in the second stage. She stated that her first child was delivered with instruments May 6, 1907, and died on the third day. The second child, April 6, 1908, instrumentally delivered, is still living. The patient was a large, stout, woman, with a thick-walled pendulous abdomen. Height, 160 cm.; weight, 85 kgm.; veins of legs and thighs markedly varicose. No abnormality detected in heart or lungs. Umbilicus, 21 cm.; ensiform, 49 cm.; crests, 31 cm.; external diagonal conjugate, 21 cm.; obliques, right 23 cm.; left 24 cm. Depth of symphysis 6.25 cm.; internal diagonal conjugate 11 cm., estimated true conjugate, 9 cm.; pelvic bones thick and contour of pelvis male type, with a protruding promontory. She was in the second stage of labor, with cervix fully dilated, membranes ruptured, and the vertex of a very large child only very slightly engaged in the left occipito-posterior position; no fetal heart sounds could be heard.

After the usual preparation and sterile protection, under complete ether anesthesia, she was delivered by internal podalic version and breech extraction. The version was accomplished without great difficulty. Breech extraction was very difficult on account of the very large thick trunk of the child, which filled the capacity of the pelvis, and a correspondingly large head. The fetus was stillborn. It weighed 5600 grams, with a total length of 60 cm.; vertex coccygeal length 35 cm., and other measurements in proportion. After delivery, the maternal pulse was 130, temperature 100. A few minor perineal lacerations were sutured.

To the seventh day, the temperature ranged between 100° and 101° F.; pulse, 100 to 120; thereafter, to normal. Patient was up on the tenth day, and discharged at her own request on the eleventh day.



Urinalysis on the ninth day showed urine acid, sp. gr., 1030; marked trace of albumin; urea, 1.8 per cent.; many hyaline and granular casts; no sugar.

Because of the subsequent history, attention is called to the absence of sugar at this time.

*Second Delivery in the Second Division of the Lying-In Hospital, Fourth Pregnancy.*—April 21, 1914, this patient again applied for care during pregnancy and confinement. She stated that her last menstruation was September 25, 1913, although she was not quite certain about the date. She was very anxious to bear a living child, and requested to be delivered by Cesarean section. Evidence of fetal movement was found and the fetal heart was heard. This patient returned repeatedly for examination as to fetal life. About two weeks before delivery she returned weeping, stating that she did not feel fetal movements. No fetal heart could be found at this time nor at a subsequent examination, several days later. Two days before admission, she returned stating that she felt the child moving. May 25, 1914, she was admitted at 11.10 P. M. (C.N. 27832) in moderately active labor which she stated had been in progress since that morning, at 12.30 A. M.

The cervix was four fingers dilated, with membranes intact. The House Surgeon recorded the fetal heart as heard on the left and above, rate 150. Maternal pulse was rapid.

The writer went at once to the Hospital and could find no sign of life in a very large child. Several other examiners did not find the fetal heart, yet some were certain that they did hear it. Because of the patient's great desire for a living child, her previous history of habitually large children with stillbirths, and the divided vote as to hearing the fetal heart, immediate delivery by Cesarean section was decided upon and done, following the technic as outlined in Case I. The presenting part could not be engaged, nor could it be reached from below without danger of rupturing the membranes. Upon opening the uterus, it was found that the breech was below in the left sacroanterior position. The anterior thigh was grasped, and delivery was by version and breech extraction. The fetus, a large female, was macerated and weighed 5200 grams. There was good uterine contraction, and only moderate hemorrhage during the operation. The placenta was removed from the upper right and posterior part of the uterine cavity. It was thick, pale and flabby. Good apposition of the uterine wound was secured by two layers of chromic sutures. The abdomen was closed in three layers.

The pulse remained steadily near 100° F. until the ninth day, and was close to 80 thereafter. Temperature during labor and first day was 101° F. On the evening of the third day, it was 103.2°; 99° the following morning. Evening of the fourth day 103°, thence gradually to normal. The abdominal wound healed by primary union.

*Blood Examination.*—June 1, 1914. On the sixth day postpartum: Wassermann, negative; red cells, 4,832,000; leukocytes, 3400; polynuclears, 84 per cent.; hemoglobin, 88 per cent.

Discharged, June 7, 1914, on the eleventh day postpartum, with

uterus in the axis of the pelvic inlet; freely movable, involuting well and only slightly tender.

*Third Delivery in the Second Division of the Lying-In Hospital, Fifth Pregnancy.*—September 13, 1916, patient came to the writer's office, again pregnant. She was vague as to the last menstruation and at different visits gave different dates, but in some way she was always positive that full term was due December 1, 1916. She stated that she had been under treatment for the past five years for diabetes. No sugar was found in the urine at either of her two former deliveries in the hospital in 1909 and 1914. Between September 13, 1916 and November 14, 1916, two reports on urine showed glucose 8.4 per cent. and 2.6 per cent. There were no symptoms referable to her glycosuria.

She was admitted to the hospital November 14, 1916 (C.N. 35582) to be under observation and await delivery. Urinalyses as follows: November 14, sp. gr., 1.032; sugar, 2.6 per cent. November 17, sp. gr., 1.033; sugar, 1 per cent. November 23, sp. gr., 1.022; sugar, 1 per cent. November 24, sp. gr., 1.030; sugar, 0.8 per cent. No albumin or casts were found.

Upon admission, the fetal heart was found to the right and above the umbilicus, 130. Thereafter it could be heard at times; at others, not. Fetal movements were always perceptible. The patient was in good health and spirits and assisted with the ward work. In the mid-afternoon of November 23d, she complained of very slight intermittent backache. The House Surgeon made an abdominal examination. The abdomen was pendulous, covered with a thick wall of fat; yet he believed that he found a large ovarian cyst in front of the pregnant uterus.

The writer then made a bimanual examination. The cervix was very high; the uterus could not be outlined. No presenting part was found. The large cyst-like mass was very evident. It changed in shape and position as the position of the patient changed. In the dorsal position it would flatten and spread across the abdomen. In the lateral position it assumed a large globular, clearly outlined shape.

The patient was unduly sensitive to abdominal pressure. It was evident that beginning labor was present. Preparations were at once made for delivery a second time by Cesarean section. Upon opening the abdomen through the former high midline scar, there came into view a sac of membranes filled with clear fluid in which fetal small parts were seen moving about actively. The fetus was presenting by the vertex, right occipitoanterior position. The membranes were ruptured and a living male child which weighed 3700 grams was delivered by breech extraction. During delivery it was found that the head of the fetus came from the uterine cavity; the remainder of the fetus was in the sac of membranes in the abdominal cavity and outside of the uterus. Not a drop of free blood was found in the abdominal cavity. The uterus was contracted and well down in the lower part of the abdomen. It was drawn up to the abdominal opening and found wide open throughout the entire length of the former Cesarean scar. The edges of this open-

ing were thick and entirely covered with adherent membranes. The placenta was on the posterior and upper part of the uterine cavity somewhat to the right. There was no blood and there were no raw surfaces. All evidence pointed to the fact that this opening had existed from before conception, or very soon after, and that for many months or during the entire pregnancy the ovum had developed largely outside of the uterine cavity. The membranes were not unusually thick nor tough. It was wonderful that a slight fall or a misstep of the mother had not ruptured them.

The edges of the uterine opening were evenly thick and contained very little scar tissue. They were cut back about 0.5 cm. around the entire circumference of the opening and closure was done in three layers, a continuous plain gut suture just above the endometrium, interrupted chromic sutures through the entire thickness of the uterine wall and the wound and deep suture ends buried with a No. 1 chromic continuous Cushing stitch. The abdomen was closed in three layers. Union was primary. The puerperium was afebrile and uneventful. Mother and child were discharged in good condition on the tenth day postpartum. The child was nursing and gaining weight. The uterus was central, movable, not tender, with the fundus 14 cm. above the symphysis.

#### DISCUSSION.

DR. FRANKLIN A. DORMAN.—I am impressed by the curious features of the second case. It seems almost incredible that a child could develop through the rupture and the membranes remain intact with the intraabdominal strain and the activity of the child. We do sometimes find membranes with a tremendous tensile strength which are difficult to rupture. I would like to ask Dr. Davis if he knows of any similar case in the literature. I would also like to ask at what time he administers the oxytocic and whether he has had other cases of rupture through the scar in his large series of Cesarean sections.

DR. GEO L. BRODHEAD.—Dr Davis' first case is extremely interesting. As I understand it, the patient convalesced without any rise in temperature, except  $101.8^{\circ}$  F., for a short time, so that the rupture of the scar followed a practically normal puerperium. When a patient has a febrile puerperium we are more afraid of rupture during a subsequent pregnancy, but here was a patient with practically no fever and yet the scar ruptured in a subsequent pregnancy.

Another point which I think is of great interest is that whereas most operators on being confronted with the conditions Dr. Davis had to meet with at the time of rupture, would have taken the uterus out, Dr. Davis sewed up the uterus, and the wisdom of it was justified, the patient going on to subsequent pregnancy. Some years ago when I reported a case of ruptured uterus that I had sutured in preference to performing a hysterectomy I was criticised in this Society for so doing. Dr. Davis' case shows conclusively that it is not always necessary to take the uterus out simply because of a rupture of the scar.



DR. FRANK R. OASTLER.—It seems to me that the lesson to be learned from Dr. Davis' cases is that we do get ruptures of the uterus following Cesarean sections. Now, isn't there some way in which that can be avoided? It seems to me that one of the causes of atrophy of the musculature of the uterus and its replacement by fibrous tissue is the manner in which the suturing of the uterus after Cesarean section is done. I have watched various men around town operate on these cases. Some I have seen using silk. A great many I have seen using chromicized catgut, but very few (in fact, almost none) have used plain catgut. I have also watched them tighten their sutures to such an extent that they absolutely blanched the muscular tissue. It seems to me that in doing that you are destroying the muscular tissue. If you shut off the circulation of the muscle that muscular tissue is going to be destroyed and replaced by fibrous tissue. Personally, I do not believe it is necessary to use that amount of tension in tying sutures. I believe the tendency is for the uterine wall to more or less approximate itself and that by using plain, simple catgut of moderate strength you can get just as good approximation without blanching the tissue and without destroying the muscular fibers.

I think I have had some thirty-two cases of Cesarean section myself with no maternal mortality and one fetal mortality and in none of them have I used anything but plain catgut. So far I have had no ruptures. I have done three Cesarean sections on one woman. So far I have not heard of any ruptures in any of these cases, not that I'm not liable to have a rupture as well as anybody else, but it does seem as though we could prevent rupture by using plain catgut in the first place and not pulling our catgut so tight that we shut off the circulation along the suture line. I might say that about five years ago I saw a case exactly similar to the second case that Dr. Davis reported where there was a rupture of the uterus and the membranes were protruding through the original Cesarean incision.

DR. J. MILTON MABBOTT.—I would like to inject a little humor into the discussion by asking Dr. Davis whether in the patient brought into the hospital practically moribund, requiring artificial respiration, saline infusions and so on, he removed the appendix at the same operation. I ask that partly because I was really surprised that he stopped to trim the edges of the uterine incision in that case in closing the rupture of the uterine cicatrix, and I ask why he did that partly to know whether he thinks he would have failed to get union by suturing the recent rupture (in his first case) in that terrible condition of collapse, and whether he trimmed the edges fearing that union would not take place otherwise. I would also like to know to what extent his patient improved after the collapse during the time before the operation and the early part of the operation, because it seems to me that Dr. Brodhead's point of not doing a hysterectomy very likely was covered by the fact that the patient's condition was such that the doctor felt he did all that could safely be done when he freshened the edges and sewed up the uterine wound.



DR. ASA B. DAVIS.—Answering Dr. Dorman, I would say that I do not know of any other case in which the fetus developed in the membranes outside of the uterus. I have never seen or heard of such a case. The wonderful thing about this case was that the sac was so thin that it seemed as though a misstep might have ruptured those membranes at any time. There was every appearance that this condition had been present from very early in the pregnancy, as there was not a drop of free blood in the abdomen and the membranes had grown to and covered the everted edges of the uterine opening of the former Cesarean wound all around and over the entire thickness of these edges.

As to the question when do we give the oxytolic, I would say it is our custom—or at least mine—to give 25 minims of ergotol or ergot as the anesthetic is being started. About two years ago I used pituitrin in twelve cases, giving it at the same time relatively as that at which ergot had been given in former operations. I now believe that my mistake in these cases lay rather in the time of injecting the pituitrin than in the drug itself, as I found upon opening the uterus, in repeated instances, that it was tensely contracted and almost bloodless. After delivery of the child, the cut edges of the uterus were an inch or more in thickness, with the muscle protruding well beyond the cut edges of the uterine peritoneum, making it difficult to secure good apposition of the sides of the wound by sutures. Not infrequently, before the uterine wound is finally closed, as though the pituitrin had spent its force, the uterus would relax, allowing rather alarming hemorrhage to occur. It is probable that pituitrin would have served me well in these operations, as it has all other surgeons, had I followed their plan and given it just before the uterus was to have been opened. I still use pituitrin to a limited extent when there is undue relaxation and hemorrhage in the middle of an operation. In cases in which it is desirable to keep the loss of blood at the minimum, a hypodermic syringe is filled with pituitrin and ready before the operation is begun.

As to the question concerning rupture of the uterus in other cases in pregnancies subsequent to Cesarean section, I may say that to date I have performed 360 abdominal Cesarean sections. As nearly as I am able to state from my memory, there have occurred nine cases of rupture of the uterus in pregnancies or labors subsequent to one or more Cesarean sections in these cases. Discarding the case in which the fetus developed in the membranes—in which rupture was not suspected—in only one case (the first case reported this evening) was the onset sudden. None of the other patients were in labor less than twelve hours. Several of the patients had been in labor seventy-two hours or over before we were made aware of it, even though they had been repeatedly advised during their pregnancies to reënter the hospital prior to the onset of labor. Only one of these nine mothers failed to recover. One patient had been in labor seventy-two hours at her home; her family urged her to go to the hospital. An ambulance was sent for her at mid-day; she refused to go. In the early evening her family brought her to the hospital in a cab. A dead child, placenta and a large quantity of

blood were found free in the abdomen. The patient recovered. All of these patients had contracted pelves and prolonged labor made them very liable to rupture of the uterus, even though no former Cesarean operation had been done.

Concerning Dr. Brodhead's question as to the advisability of removing the uterus in such cases, and at the same time answering Dr. Mabbott as to whether appendectomy was performed: In no instance was anything more done than trimming the edges of and closing the uterine wound. I have never removed a uterus at the time of performing a Cesarean operation. When this operation has been done, we have done enough. Should other operations prove necessary, it is better to postpone them until the uterus has involuted and the great vascularity has diminished.

Concerning Dr. Oastler's remarks as to the cause of rupture of the uterus subsequent to Cesarean section: I am free to state that I do not know, nor do I know of any one who has given a wholly satisfactory reason for this accident. In some cases the poor physical make-up of the patient must be partially responsible. Being obliged to close a muscle which has no fascia and which is again to be subjected to distention and intense strain, a febrile puerperium with metritis is undoubtedly a factor, resulting in imperfect closure of the wound in some cases but not in all. Repeatedly, one operator after another attributes his failure to see ruptures of the uterus in his Cesarean cases to some peculiar method employed by him in closing the uterine wound. The speaker was able to report thirty-nine consecutive Cesarean sections without a rupture. We are not yet convinced that this accident is due to faulty methods of suturing the uterus. In the last few years, especially within the last three years, reports of rupture of the uterus subsequent to Cesarean section have been coming to us in increasing numbers from the whole obstetrical world. These operations must have been performed by surgeons of all grades as to skill and experience and many different plans of suturing must have been employed. To me it is unthinkable that many of these ruptures were the result of faulty suturing.

My first case occurred in a small woman with markedly contracted pelvis. She had been in labor for a long time. The rupture began in the lower left side of a thinned out lower uterine segment, extended upward toward the right, and included only the lower half of the former Cesarean scar. This rupture would, very probably, have occurred had no previous Cesarean section been performed. In this case we trimmed the edges of the wound well back to sound muscle and sutured it. The patient made a good recovery.

DR. HERMAN GRAD reported a case of

RETROPERITONEAL HERNIA IN THE DUODENO-JEJUNAL FOSSA.\*

DR. H. C. INGRAHAM (by invitation) reported

THREE CASES OF POSTMORTEM CESAREAN SECTION.

CASE I.—A. J., aged twenty-six, colored, para-i, admitted to the Woman's Hospital on the morning of September 30, 1917, in active

\* For original article see page 102.

labor. An operation on the right kidney had been done five years previously and four years ago she was again operated upon for "adhesions." Three years previously a Cesarean section was done at Bellevue Hospital after she had been in labor three days. Her last regular period previous to admission was on December 10, 1916. She spotted slightly in January and February, 1917. Examination on admission showed a small poorly nourished woman about 5 feet in height, who had been in active labor for about twelve hours and at the time of admission the pains were severe, coming on every three or four minutes. A slight kyphosis in the upper lumbar region was present. The abdomen was pendulous. The uterus was about the size of a seven and one-half months' pregnancy and the pelvic measurements were as follows: Interspinous 22, intercristal 25, obliques 21, external conjugate 18.5, diagonal conjugate 9.5, true conjugate 7.5, between the tuberosities of the ischium 6 cm. The cervix was firm. There was no dilatation and the head was floating. The fetus was in the L. O. A. Fetal heart good. Two hours later a Cesarean section was decided upon as no progress had occurred. After a few inhalations of ether the patient ceased breathing and could not be resuscitated by the usual methods. The fetal heart sounds and movements were observed and as soon as the woman was pronounced dead, the abdomen was immediately opened and the uterus incised. The child was extracted and was in a state of asphyxia pallida. It weighed 4 pounds 11 ounces, and responded to the usual methods of resuscitation. Later on the respirations became labored and irregular and the child died about an hour after delivery.

CASE II.—Mrs. K., aged twenty-nine, white, primipara, admitted to the Woman's Hospital January 19, 1917, in a moribund condition with lobar pneumonia. The woman was in a critical state and died the following morning. The fetal heart was heard about twenty minutes before the death of the mother. A postmortem Cesarean section was done as soon as the mother ceased breathing and a small dead child in a spastic condition extracted.

CASE III.—Mrs. N., aged twenty-three, primipara, admitted to the Woman's Hospital September 8, 1917, with a diagnosis of eclampsia at term. She had had five convulsions before admission and two after arrival, during the last one of which she died. The fetal heart was heard after the woman was pronounced dead and the abdomen was immediately opened. A baby weighing 8 pounds and 15 ounces was extracted in deep asphyxia. It was resuscitated by the usual methods and survived.

DR. ASA B. DAVIS.—I have had no personal experience in performing postmortem Cesarean sections. I believe there have been twelve cases of this operation in the Lying-In Hospital, including the ten cases reported by Dr. Harrar, just mentioned; two infants were discharged alive from the hospital.

The nearest approach to this operation was done in a nearly full-term pregnant woman suffering from pneumonia. She was sitting upright in bed, cyanosed, using all of her accessory respiratory muscles, with each breath lifting a heavy pregnant abdomen. She had



every appearance that she would die in a few minutes. Without changing her position or moving her, she was given chloroform and I did a hasty Cesarean delivery. The child which was viable, lived for three or four days, and died. From the first inhalation of chloroform, the patient's condition improved. She apparently continued to improve for ten hours. Then her heart failed and would not respond to stimulation, and she died an hour later.

DR. FRANKLIN A. DORMAN.—My experience with postmortem Cesarean section has been limited to two cases. In the first one I was called in an emergency to a house in the neighborhood to see a young woman about eight months along, who had gone to bed apparently feeling well and suddenly waked with a choking sensation. She appeared very ill and her family sent for the nearest doctor. I found the woman supported in bed, with very labored respirations, and within ten minutes she died in spite of everything we could do for her, or rather what little we could do. In this case I was face to face with an emergency which was a very difficult one indeed to handle because everybody in the family was there, the father, the mother and the husband of the woman. An hour before this they all supposed the woman to be in perfect health and with nothing at all the matter with her. I had to go to the family, inform them that the woman was dead and tell them that it was necessary to do a Cesarean section. Then the nurse protested and asked me to wait for the arrival of a regular physician. However, they were all overruled and after this moderate delay I secured a razor, opened the abdomen and extracted a baby in which the heart was beating. I worked over the baby for a half an hour, but could not establish respiration. We found afterward in catheterizing the woman that her urine had a large percentage of albumin.

The second case was one in which the woman had considerable temperature and a bad throat condition, a case at the City Hospital. She had a temperature of  $103^{\circ}$  F. during the labor that night. That morning I found her with a flat pelvis, which the child evidently could not pass through, and this infection. She was in poor condition. We decided to deliver her under local anesthesia, the injection into the spinal canal of novocain. I left the woman on the table after the injection and turned to scrub up when some one who was standing opposite the woman said, "She has ceased breathing." I went over and found the woman had died suddenly from novocain poisoning. The abdomen was opened right away, but the child was dead.

It is a rather rare thing for a man to be faced with this situation, but Dr. Ingraham's cases show that very prompt action may result in saving life. Certainly it is better to act as promptly as we can although there may be an uncertainty as to whether the woman is actually dead and in our haste to open the abdomen when the woman is still alive, we may only speed her death.

DR. HENRY D. FURNISS presented a cinematograph demonstration of an

#### OPERATION FOR URETERAL TRANSPLANTATION.

\* For original article see p. 14.



## DISCUSSION.

DR. FRANK R. OASTLER.—I would like to ask Dr. Furniss in what way this operation which he describes differs from the old Israel incision, an operation for exposing the ureter. It seems to me it is exactly the same thing. Beginning with Koenig's incision and continuing with Israel's the ureter can be exposed anywhere along this course.

DR. HERMANN GRAD.—Isn't it just as well, in anastomosing the ureter, to pass your instrument through the urethra, as we usually do and punch a hole through the bladder wall instead of going through the bladder wall in different places? Usually we pass forceps through the urethra and place it wherever we wish to emerge, and pull the ureter through the same as Dr. Furniss does. I think the incision Dr. Furniss makes is a good one and you can get at it very comfortably.

DR. JOHN O. POLAK.—It seems to me that the method of passing a forceps through the bladder wall in the way shown by Dr. Furniss facilitates the operation of suturing the ureter to the posterior bladder wall, which is the position most difficult to secure with sutures. I have done this operation four times, not as Dr. Furniss has done it, but by drawing the ureter into the bladder with forceps and have always had difficulty in suturing the bladder and ureter posteriorly, while in this picture, it seems so easy to get the suture in place by having the ureter drag the bladder upward into a position where we could place the suture. One point I am not so clear upon, is whether this ureter, the end of which is clamped and naturally traumatized, if left in the bladder is going to give as good a result in the end as the way that has hitherto been used of splitting the ureter and fastening the two split ends to the bladder wall. In our cases which we have followed it has been shown that the function of the kidney has been absolutely lost in from six months to two years.

DR. EDWARD W. PINKHAM.—I was very much pleased to see that bladder incision of Dr. Furniss' because it struck me as a very easy way of controlling the end of the ureter and bringing it through and suturing it, as Dr. Polak has said. I was particularly interested in the procedure of leaving the long end of the ureter in the bladder. I should like to see how that would look some six months or so afterward.

I have done three of these cases. The last one I did about seven years ago, in which I resected both ureters for cicatrix following the Percy operation, implanting the ureters into the fundus of the bladder. I made a large, anterior incision in the bladder. It resulted in considerable bleeding and there was difficulty afterward in closing it up. That patient lived for thirteen months and died of cancer.

The idea of punching the bladder seems so simple that it is a wonder we didn't think of it before. It seems to me ideal for the long end of the ureter if it is going to give as good an os as the split end, which has been done heretofore.

DR. HIRAM N. VINEBERG.—There is one point about which I would like to inquire. In several cases which we have had occasion

to operate on a great deal of difficulty has been experienced in having enough ureter to work up to the bladder after the bladder was mobilized. I would like to ask Dr. Furniss how he treats these cases when there is a shortened ureter and whether he can do them as well extraperitoneally as one can do them intraperitoneally.

DR. HENRY D. FURNISS.—The first question I will answer is that raised by Dr. Vineberg. In cases where the ureter has been injured high up the best technic is to mobilize the bladder, carry out the suggestions of Boveë and mobilize the kidney, which he has done on animals and which has also been successfully done by Payne on the living subject. The mobilization of the kidney can be done to a slight extent, allowing a drop of an inch or an inch and a half.

Dr. Polak spoke of splitting the end of the ureter. I have observed two or three of these cases afterward and there is really no tendency for the end of the ureter to contract. Usually a tube lined with mucous membrane has no tendency to contract. The point of greatest contraction is where the ureter comes through the bladder wall.

In regard to the function of the kidney afterward, I would say that I think the answer to that point will be found in E. Starr Judd's report from the Mayo Clinic, in which he reports a number of cases, some of which were studied thoroughly afterward, and some of which were not, and proves conclusively that a ureter cannot only drain the kidney and have the kidney carry on its function, but it does it well. I have one case which was done three years ago for stricture of the ureter. In that case the pelvis is now smaller than when she was operated on. There is no infection at all and the function of the kidney is all right. I did a case six months ago for stricture of the ureter with great dilatation of the pelvis, which showed a measurement of 30 c.c. Three months afterward the pelvis had contracted down to 10 c.c. and there was less pus in the urine than before. No postoperative functional kidney tests have been done on this case as yet.

The chief reason for doubly piercing the bladder and then implanting the ureter was to avoid the necessity of passing the forceps through the urethra. The latter method necessitates a disarrangement of the patient and the operative field and the use of another assistant without offering a single advantage. I do not claim any originality for the incision at all. I simply dropped into it. I find that Gibson had already done practically the same thing. I recently saw in consultation a case in which there was a large mass in the kidney region. The consultant said, "if this mass was not so high and I did not know that the woman had already been sterilized by having her tubes ligated, I would think that she had an ectopic." I went into the history of the case and she told me that she had first felt faint a few hours after she had pain in the region of the kidney. I explored the kidney and found a large perirenal hemorrhage from a hypernephroma. While I cannot be certain, I imagine that the renal vein or some of its branches had been already involved and had broken. It is the only case I know of with a perirenal hemorrhage.

## TRANSACTIONS OF THE SOCIETY OF THE ALUMNI OF THE SLOANE HOSPITAL FOR WOMEN.

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*Meeting of October 26, 1917.*

*The President, DR. HENRY W. TITUS, in the Chair.*

DR. A. W. BINGHAM presented a specimen of

### FULL-TERM CYCLOPS.

The specimen was obtained on September 20, 1917, at the Orange Memorial Hospital after a breech extraction. The child was unable to breathe although the heart continued to beat about two



FIG. 1.—Full term cyclopean monster.

minutes. The mother was a multipara, colored, aged twenty-seven. She had one living child aged two years. There were no miscarriages. The child (female) is apparently normally developed except that there is one eye in the middle of the face with a sort of

proboscis above it. The bones of the scalp are widely separated showing some hydrocephalus or faulty brain development. The mouth is somewhat smaller than normal.

DR. GEO. L. BRODHEAD presented a specimen of

#### FETUS PAPYRACEOUS.

This specimen was presented chiefly because of its unusual character; Dr. Brodhead having met with but one other specimen, which was seen in his service at the Sloane Hospital in 1896. The fetus at the Sloane was somewhat smaller in size, of about four months' gestation. The history of the labor in the case which the writer presented, is as follows: M. G., aged thirty-four, para-iv, was admitted to the Harlem Hospital, May 5, 1916. The last menstruation was October 7, 1915, and expected confinement July 14, 1916. The menstrual, family and personal history was negative. There had been two previous labors, one of which was terminated by forceps, the other normally, and one miscarriage at two months. At the time of admission to the hospital, two months before the expected date of confinement, the uterus was markedly distended with fluid, the fetal heart not heard, but fetal movements felt. The labor was uneventful, the living twin presenting by the vertex, and delivery was normal. There was one placenta with two amniotic sacs, one of which contained the seven months' living fetus and the other, the specimen here presented. The premature infant was microcephalic, but left the hospital with the mother in fair condition. The fetus here shown appears to have developed normally up to about the end of the fifth month. It had then died and had been flattened out against the uterine wall by the growth of the living fetus. The flattening is especially marked posteriorly, this portion of the fetus having been in contact with the uterine wall. The patient made an uninterrupted recovery. A Wassermann test taken during the puerperium was negative.

#### DISCUSSION.

DR. J. D. VOORHEES.—I think that some of these cases may be overlooked. I have a specimen from my service at the Sloane where a normal colored baby was born and in a casual examination of the membranes there was discovered a slight oval area about 3 inches by 2 inches, in which there was a fetus flattened out. It was only by careful examination that you could make out the eyes, the ribs, the extremities, etc., all bundled on top of each other.

DR. F. A. DORMAN.—I once saw a woman in the fifth month of her pregnancy, who had a great deal of distress from the strain of what proved to have been twins. She was very weak and when she attempted to take a walk she would faint. All of a sudden the condition improved and the uterus rapidly became normal for the time of her pregnancy. She went to term and had a normal baby. In pushing out the afterbirth it seemed a little large. The



flattened fetus in the second sac was somewhat smaller than Dr. Brodhead's. This was the explanation of the oversized uterus in the early part of her pregnancy and the rapid recovery with the death of one fetus.

DR. HENRY P. DE FOREST reported two cases of

PELVIC OBSTRUCTION TO LABOR AS A CAUSE OF PUERPERAL  
MANIA.\*

DR. WILBUR WARD presented a specimen of a

LARGE FIBROID OF THE ROUND LIGAMENT.

The histological examination of this specimen showed it to be a pure fibromyoma, exactly the same as if it had been detached from the uterus. The point of interest was that it arose from and was limited to the right round ligament. The woman was a Russian, forty years old, who had had two children, the last one twelve years previously, and had been a widow for seven years. Her menstrual history was entirely normal, there being no change in character in recent years. For six months or so, she had been conscious of a mass growing in her abdomen, which at times caused a little distress simply from its physical presence. Upon admission the mass was smooth, round and symmetrical, and extended above the navel; it was freely movable, not tender. A vaginal examination disclosed a small, normal uterus in front and the impression was that the mass originated from the right side of the pelvis, a diagnosis of a simple, right-sided ovarian cyst being made. At operation, however, the tumor was found to be solid and, after enlarging the incision, it was delivered and found to arise from the right round ligament, about 3 cm. from the horn of the uterus. Its pedicle was 4 cm. long and 6 to 8 mm. broad. Both the proximal and distal ends of the round ligament were normal. There were no adhesions. The blood supply came through the broad ligament into the base and it was a simple matter to ligate the base, remove the tumor, bring together the cut ends of the round ligament, cover the same over with peritoneum, restoring the integrity of the same. The uterus, tubes and ovaries, and left round ligament were absolutely normal.

These tumors of the round ligament are not rare, but are uncommon and this one, which was almost spherical in shape, 46 cm. by 48 cm., weighing 3 pounds 8 ounces, is of interest because of its size. It is also of interest to know that it occurred in the right round ligament in a multipara, which has been found to be a part of the history in a large majority of these cases.

DR. JAMES D. VOORHEES read a paper entitled

CAN THE FREQUENCY OF SOME OBSTETRICAL OPERATIONS  
BE DIMINISHED.†

\* For original article, see February, 1918, issue.

† For original article see page 1.

## DISCUSSION.

DR. E. B. CRAGIN.—I think most of us who have been doing obstetrics for the last ten or twenty years can honestly claim that better obstetrics is done in New York to-day than twenty years ago, but for the last few weeks I have been feeling that we are just in the infancy of better obstetrics in the city of New York. I am perfectly free to say that I think the City is going to be very grateful to Dr. R. W. Lobenstine for the work he has done along the line of improvement in the care of obstetric patients, both the mother and the child. The reason I have felt of late that we are just in the infancy of better obstetrics is because of what is going on in the conjoined work of the Health Department, the Women's City Club, the Milk Committee and the committee of representatives from the different obstetrical hospitals here in the city. There is dawning a new day for the care of obstetric cases here in New York. I have great hope for the future of obstetrics.

Here in the City the great problem has been to limit the field of each hospital. The Sloane has drawn very largely from certain districts in Harlem, as our colored clientele formerly lived in the neighborhood of the Hospital. Then a large colony of colored people established themselves in Harlem, this meant that our Harlem patients would not come down to Sloane as often as they should to be looked after. Now, that is all going to be changed. We are to give and take. The different hospitals are to agree on a limited district from which they are to receive their patients, and if patients outside the district come to the individual hospital which is a member of this society or association, they are going to be referred to the hospital in their particular district.

It is somewhat of an advance statement, but I have no objection to saying that Sloane is going to try to limit itself to the district bounded on the south by 26th Street, on the north by 105th Street on the east by 6th Avenue, and on the west by the North River. I will speak of that district because I am more familiar with it. In that district there are now three hospitals, the Nursery and Child's, the Women's Medical College Hospital and the Sloane.

It is quite evident that better obstetrics can be done if the patients are drawn from a small field.

The most important thing next to the doctor and the nurse in an obstetric service is the social service worker. That is a new development and yet I am free to say that I should not know how to have the Sloane run properly were it not for the trained social service worker. You can readily see that if our upper limit is 105th Street and our lower limit 26th Street, the social service worker can see the patients frequently. If a woman does not present herself, one of the social service workers can visit her in order to find out what the trouble is. After she leaves the hospital the social service worker can visit the woman and baby and see that the mother takes the baby to the proper place for care.

The great fear has been, of course, that a hospital service would be

reduced too much for teaching purposes. We do not believe it will. It is an experiment, but we believe it will work satisfactorily for the reason that those outside the district who would go to us will go to another hospital and those inside the district formerly going to other hospitals will probably come to us. It does not exclude us from taking referred cases of doctors at a distance. It does not exclude our taking emergency cases. Not only that, but there are to be established in different parts of the City, district centers where some lay people and some professional people may unite in giving advice to these expectant mothers. In other words, we think that in the future the woman soon after she becomes pregnant will be watched over and will be sent to the proper hospital, will have it determined that she goes when she should and, further than that, the hospitals in this association agree that they will take the blood pressure and examine the urine every time the patient comes and if she does not come at the proper time a postal card will be sent to her asking her to call, and if she does not respond to that the social service worker will be sent to her. In other words, the patient is going to be looked after as she never has been before. That, I believe, is the hope of obstetrics in New York and I believe it is by the combined efforts of these different branches of good endeavor that we are going to get better results. A Wassermann test will be taken in every suspicious case. Some of you perhaps know that at the Sloane a Wassermann is taken on every case that applies for admission. In this proposed scheme, the blood pressure and Wassermann test will be taken and the urine examined. These people will be seen at frequent intervals, and if they do not appear somebody is going after them to bring them in. I believe in that way obstetrics in New York will be placed on a higher plane than it has ever been before.

DR. F. R. OASTLER.—I may say before discussing the paper that the plan outlined by Dr. Cragin is an extremely useful and valuable one, but it occurred to me that there is going to be a difficulty which possibly he has some way of overcoming. In my obstetric service at Lincoln Hospital a very large proportion of our work comes in on the ambulance. We have a certain district in which I think there is one and possibly two or three obstetric services, but most of our emergency work and a great part of our other work comes in by way of the ambulance. We thus have control of the whole district, so it will be very hard, I think, to persuade our hospital to take cases to the other three obstetric hospitals in our ambulance.

DR. CRAGIN.—All emergency cases are allowable and can be taken in by a hospital without any objection from any member of the Association

DR. OASTLER.—Try as you may, it is almost impossible to get some of these individuals to come. It is very difficult to get them to recognize a system at the present time because they haven't been educated up to it. Eventually, I suppose, we will be able to educate them.

But to return to the discussion of Dr. Voorhees' paper. There are



two or three things in the paper in which I was interested. He mentioned the necessity of examining the urine but it seems to me he left out one very important thing and one which is becoming much more important to me than even the nitrogen partition, which is probably one of the most difficult things to do and do satisfactorily, and that is the carbon dioxide absorption test, in which I have great faith.

We all have a lot of theoretical knowledge about the toxemia of pregnancy, but for physiological or chemical knowledge we are at a loss. We do not know whether it is an acidosis or what the relation of acidosis to pregnancy is, or whether it is a general toxemia of which the acidosis is a symptom. In other words, the blood, so far, has not given us a sufficient knowledge, so that we can speak definitely on the subject, but the carbon dioxide absorption test it seems to me gives us something of real value in determining the danger point in these cases of toxemia of pregnancy and I think it is very necessary that it should be taken into consideration, as well as the examination for indican, for urea, for the various nitrogens, etc.

Another thing about the necessity for examination of the urine with respect to eclampsia. Dr. Voorhees seems to think that by careful examination of the urine we can almost always avoid eclampsia. It has just been my misfortune in the last three months to lose one of my patients from eclampsia. Two days before she died of eclampsia her urine was very carefully examined and found to be perfectly normal. There was absolutely no trouble with the urine right up to the time she went into labor, practically at term, but she had a convulsion six hours, I think, after labor. She was a multipara and died in the first convulsion. I am thoroughly satisfied that it was not a case of nephritic eclampsia. It was a case of liver toxemia, the presence of which at the present time I know no way of determining satisfactorily. In my opinion, up to the present time it takes more than the urine to determine whether we are going to have eclampsia in any given case.

Dr. Voorhees also mentioned the fact that at the Sloane there are fewer eclamptic cases than formerly. He forgot to mention the fact that the Roosevelt Hospital ambulance service had ceased. On the other hand, with our ambulance service at Lincoln Hospital we are having more eclampsias than before. So I think the ambulance service has a great deal to do with the statistics.

The diet card which Dr. Voorhees passed around was very instructive. However, I have a criticism to offer and that is a criticism of the food elements. He has laid down some stereotyped rules with respect to the food. I regard that as a mistake. I think it is like trying to fit your baby to the milk formula instead of fitting your formula to the baby. It is very essential to find out something about the digestion of the patient before you lay down laws as to what kind of food she is to take during the puerperium. A great many of our women have hyperacidity and must be treated accordingly.



I would like to ask Dr. Voorhees one other question. He says he has been able to reduce the weight of the baby 2 or 3 pounds by the diminution of the starch. May I ask why it is that he diminishes the starch particularly? Wouldn't it be a better plan if in his efforts to diminish the size of the child, he should work on the number of calories he gives the patient rather than by particularly diminishing the starch?

It seems to me that we should try a little preventive treatment with respect to the pendulous belly. Instead of trying to correct the pendulous belly when a woman is pregnant, why not try to prevent it by developing the musculature after she has finished the previous pregnancy and keep her in shape? I think a great many of the mistakes we make is in making an examination three or four weeks after she has a child and instead of keeping her under observation and doing what is indicated she is sent back to the general practitioner who forgets her and that is the last we see of her until possibly the next time she is pregnant. If we would take care of the abdominal muscles in these women, especially the women who have had children and have really no business to have them, because they are not physically strong enough, and develop them, we would not get pendulous abdomens, prolapses of the stomach and so many enteroptoses.

The question of the early induction of labor, I think, is rather a serious proposition. There are very positive indications for the induction of labor but I find that I cannot easily in all cases induce labor with the Champetier deRibes bag, or Dr. Voorhees' modification. I often have a great deal of difficulty. A good many times I have to put in not one but two and three bags without starting labor and then wonder what I am going to do next. It seems to me that it sometimes is a very good plan to stretch a point and wait for labor to come on rather than induce labor and have the woman go into labor with poor pains.

DR. G. W. KOSMAK.—I want to take up the cudgels in defense of what Dr. Voorhees says about induction of labor. I wrote and read a paper on that subject some years ago, and was severely criticized for my radical views and had to leave the meeting almost in disgrace. Certain practitioners present objected very sincerely to any interference with the course of nature and their comments were only limited by the fact that there were ladies present.

I heartily agree with Dr. Voorhees in his views about the induction of labor and in all the cases I have been able to follow through pregnancy I have never induced labor and gotten a premature baby. In all my cases I measure the fundus at regular intervals and watch the growth of the fetal head and its adaptation to the brim.

Contrary to Dr. Oastler's experience, I must say that my personal experience with the Voorhees bag has been most successful and I rarely must put in more than one bag. In fact after we put in the bag and give the woman a dose of castor oil the pains invariably begin. Sometimes in certain primiparæ, or even multiparæ, when we get the cervix well thinned out and practically fully dilated, there seems to me to be no reason why we should not go ahead and

rupture the membranes. Very often a very distended uterus is the sole reason why the woman does not go into labor and when the cervix is fully dilated, or dilatable, in multiparæ by the use of the bag, there seems to me to be no reason why we should not rupture the membranes and allow the head to come down on the cervix, if it hasn't come down properly before.

DR. F. A. DORMAN.—I think that perhaps I have lived too close to Dr. Voorhees all these years to criticise a paper of his. It seems to me it is a most admirable exposition of the care that we should give our patients as far as we can personally.

In regard to what Dr. Oastler brought up about the use of the bag: it seems to me that as time goes on I introduce a bag with more reluctance than I did years ago, because to my mind it is not an obstetrical operation. Dr. Voorhees' paper is on the question of reducing the number of obstetrical operations, yet he quotes 20 per cent., or 1 in 5, for the use of the bag. I think that the use of the bag adds some risk. Very often it invites inertia and I don't see how we can tell whether or not the patient is of the inertia type before using the bag.

With regard to statistics: if we could get the morbidity from the use of the bag as compared with the cases in which the bag was not used, I think that would be of some interest.

I believe that we can perhaps be a little too apprehensive about using a bag in these cases and in our desire to see the patients deliver, the bag might be used a little too often, and the use of the bag (induction of labor) has certain definite disadvantages.

DR. G. H. RYDER.—There were two things in which I was particularly interested, one of them being the use of pituitrin. I would like to ask Dr. Voorhees why pituitrin should not be given until the membranes rupture. You can give it many times when the membranes are not ruptured with perfectly good results. He also said that pituitrin should not be given until the cervix is fully dilated. I think it can very well be given when the cervix is dilatable, when it is almost fully dilated, but not quite so, and the pains have died out and there is nothing keeping the labor back except the lack of pain.

Another thing that I would like to speak of is the use of nitrous oxide gas. Dr. Voorhees says that it increases postpartum hemorrhage. This has not been my experience. Last year before the New York Obstetric Society I reported a series of 137 cases of nitrous oxide analgesia in childbirth. In this series a careful record was kept as to postpartum bleeding and it was found that there was less hemorrhage in this series than in the ordinary run of labor cases at the Sloane Hospital.

DR. A. W. BINGHAM.—I think that besides putting the patients on a diet it is a good thing to weigh them. I had a patient who was on a very strict diet; in fact, Dr. Voorhees had had the case under observation and was taking care of her, and I attended her in his absence. She had been on a very strict diet, as he suggested. That baby weighed  $9\frac{3}{4}$  pounds. That woman probably ate twice

as much as she should have eaten. I said to her, "You must have had a good appetite," and she replied, "I didn't eat a thing that Dr. Voorhees didn't tell me to eat."

I had a patient who came to me at seven months and told me that she had gained 100 pounds. I ordered her to limit her diet very much. She was going down to the seashore the next day. She was in the hands of a physician down there and while there had an acute attack of gastric pain and was treated for it. In a couple of weeks she came back to town and on the day she returned she had another attack. The urine was examined and found to be loaded with albumin. That baby died immediately before labor started. I think she ate altogether too much, and a good many of these patients seem to be pretty well fed, even though they are on a diet. I have gotten into the habit of weighing them and believe they ought not to gain over 25 pounds in the nine months.

DR. JAMES D. VOORHEES (closing).—Preventive obstetrics is undoubtedly of the greatest value to our patients. I also believe that all of us want to see better work done in our specialty in New York City. The scheme outlined by Dr. Cragin ought to accomplish wonderful results along these lines.

I will attempt to answer some of Dr. Oastler's numerous questions. Eclampsia, as I have said, is a symptom of complex origin. The examination of the urine is the only definite guide we have by which we can anticipate this dreadful complication besides the patient's clinical symptoms including her blood pressure. I believe that almost all of the cases of antepartum eclampsia can be prevented by a careful study and management of our patients. A very, very few may have a convulsion without any warning whatsoever. I think the case mentioned by Dr. Oastler was without doubt of a fulminating type. There are a great many intrapartum and postpartum cases of eclampsia which develop without any premonitory symptoms. Even a urinary analysis shows no albumin, no casts, no acidosis. I do not know whether Dr. Oastler's patient had had chloroform or not for her delivery (Dr. Oastler replied that she had not had chloroform), because chloroform is responsible for many such forms of toxemia. Besides there are some cases where the process of labor itself somehow or other upsets the woman's metabolism and perverts the function of some one organ or some group of organs. It may be the liver, it may be the thyroid, it may be the thymus, or it may be some other organ. This damaged organ, or these damaged organs, are the cause of this overwhelming toxemia—this fulminating eclampsia.

Dr. Oastler spoke about the carbon dioxide absorption test in the diagnosis of threatened eclampsia. I think it ought to be of great value but have not had much experience with it as yet, so that I do not know much about it. I believe there is some ground for the hope that this test will help us to determine what patients are going to become toxic. If it will accomplish this, it will be a great help in diagnosis as our other tests do not tell us the whole story.



Dr. Kosmak and Dr. Dorman have fortunately answered some of Dr. Oastler's questions in regard to induction of labor. One cannot arbitrarily start labor. The case should be carefully studied and the conditions favorable, especially in a primipara. It is much better to let those patients who have a rigid cervix go into labor and have the test of labor rather than start it by inserting a bag, irrespective of the local conditions, just because the child seems a little too large or the pelvis seems a little too small.

The cervix should be soft and the uterus irritable for a quick immediate result. Of course we cannot determine beforehand this uterine strength. I wish we could. I rarely induce labor in a primipara unless the indication is for toxemia of pregnancy.

With regard to the high percentage of induction in my private practice, which I quoted, I will say that in my last 200 cases I have happened to have a large number of multiparæ who have had previous difficult labors with stillbirths. The results have been excellent by starting the labor ten days to two weeks ahead of time. Usually only one bag, No. 3, is needed. With the cervix admitting two fingers, this bag can be introduced at 9.00 A. M. Usually by 2.30 P. M. with a few pains, sometimes without pains, the bag will be found in the vagina. I do not hesitate then to do what Dr. Oastler probably did not do in most of his cases and that is to rupture the membranes. In two or three hours after this procedure the baby will usually be born spontaneously.

Dr. Oastler also commented upon the decreased frequency of eclampsia at the Sloane Hospital. The fact that the Roosevelt Hospital Ambulance service has been discontinued undoubtedly is partly responsible for a reduction of these cases. I also believe that better advice and management in the clinic and by the doctors outside have diminished the number also.

Dr. Oastler criticised the advice as regards to food in the folder of notes for pregnant women which I presented to the Society. Each patient of course must be studied individually and each one of these rules must be explained and adapted to the individual patient. The folder of rules is a means by which the patient will get easily some sound advice. I think it is well known that an abundance of carbohydrates in the diet will increase the size of the baby.

In regard to a pendulous belly: a corset worn during the first pregnancy will prevent the condition to a great extent. After labor an abdominal binder at first and later exercise of the abdominal muscles will tend to correct a diastasis. If a woman has already a weak abdominal wall, a tight corset worn during a subsequent pregnancy will prevent the muscles from stretching further.

Dr. Dorman asked whether there was any increase in morbidity in my induction cases. There was no increase as far as I can remember. In the last 200 cases I do not believe there was any morbidity at all. I do not like to use a bag but I think if we are careful and sure of our asepsis, if we do not have to introduce many



bags or make many examinations, there should be no rise of temperature.

In answering Dr. Ryder, I would say that I see no use in giving pituitrin until after the membranes have ruptured. Simply letting the water off will sometimes start up strong pains and so obviate the necessity of giving the drug. I do not like to give pituitrin early in labor. The first pain after its administration is usually long, strong and continuous. If the cervix is not fully dilated or dilatable, the head may be forced too quickly through it and tear it.

In regard to the increase in postpartum hemorrhage in my cases after the use of gas, perhaps I have simply had more hard luck than Dr. Ryder. I think ether after the use of gas may be safer in this respect than chloroform.

The case mentioned by Dr. Bingham which took on too much weight may be explained by the fact that she may have been more or less generally edematous. Some patients in regard to diet, as he said, will carry out your rules too literally. All of these rules may have to be changed from time to time to suit the individual case.

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## REVIEWS.

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### THE BREAST: ITS ANOMALIES, ITS DISEASES AND THEIR TREATMENT.

By JOHN B. DEEVER, M. D., LL. D., Sc. D., Professor of the Practice of Surgery, University of Pennsylvania; Surgeon-in-chief to the German Hospital; Visiting Surgeon to the Hospital of the University of Pennsylvania; Consulting Surgeon of the Germantown Hospital, The Philadelphia General Hospital, Saint Agnes Hospital, and Mount Sinai Hospital, Philadelphia; and JOSEPH MCFARLAND, M. D., Sc. D., Professor of Pathology and Bacteriology in the Medical Department of the University of Pennsylvania; pathologist to the Philadelphia General Hospital; Fellow of the College of Physicians, Philadelphia, Pa., assisted by J. LEON HERMAN, B. S., M. D., Assistant Surgeon to the Methodist Hospital of Philadelphia, Instructor in Anatomy, Medical School of the University of Pennsylvania. With 8 colored plates and 277 illustrations in text. Price \$9.00. P. Blakiston's Son & Co., Philadelphia. 1917.

In presenting this book to the profession its authors have been moved by two prime considerations: first, the importance of collecting individual experiences in order that deductions and generalizations may follow, and second, the dissemination of known facts of vital importance in the treatment of the malignant diseases of the breast. After a perusal of its pages it may be said without fear of contradiction that these objects are fully realized and that the work constitutes an important and praiseworthy addition to American

medical literature. The wide experience of its authors in this field of surgery and pathology lends to the work an air of authority that is well borne out by the specific presentation of the material upon which the conclusions are based. A glance at the table of contents discloses the extent of the large field covered. After a series of introductory chapters which take up the evolution, surgical anatomy and the anomalies of the breast, the traumatic injuries and infectious diseases are considered. The clinical course and treatment of these conditions is very satisfactorily presented and considerable space is given to the more unusual infectious diseases such as tuberculosis, actinomycosis and syphilis. A complete review of the published cases of tuberculosis based on microscopic diagnoses is presented, which the authors divide into primary and secondary groups. The primary include only those cases in which the disease is confined to the breast and axillary lymph nodes of the same side. This type is very rare and most cases of mammary tuberculosis may be regarded as secondary manifestations. Evidently the disease is a very uncommon one as a total of only forty-eight undoubted cases have been reported in a period of ten years. Although operative treatment is advocated the authors advise conservatism in limiting the area of excision and also call attention to the necessity of a careful differential diagnosis before adopting any method of treatment. Considerable space is given to the discussion on mammary cysts and the greater portion of the remainder of the book is given up to the subject of mammary neoplasms. The classification of breast tumors adopted is that suggested by Warren of Boston. Although it is stated that no satisfying scientific classification has yet been devised, the most successful systems are based on histological resemblances between tumor tissue and normal tissue, but this must be modified by the fact that histological structure may be confused with embryological descent.

The authors describe as nonindigenous tumors those which are in no sense peculiar to the mammary glands and arise through perversion of growth in the connective tissue, that might develop through the same means elsewhere. These tumors are benign with the exception of sarcoma and remain localized without extension into other parts. Fibroma, lipoma, myxoma, angioma, myoma and neuroma among the benign and sarcoma among the malignant varieties are thus described. Deaver regards breast sarcoma as a rare tumor, only fifteen cases having been encountered in the German Hospital in Philadelphia in sixteen years, or about 2 per cent. of the total number of breast tumors and 5.5 per cent. of all the sarcoma cases admitted to the service. In four out of seven cases operated upon by Dr. Deaver the patients got well, the other three died from the recurrences. Considerable space is given to the description of the fibroepithelial mammary tumors, or so-called fibroadenoma and, according to the authors' hospital statistics they constituted 23.7 per cent. of all mammary neoplasms, somewhat higher than the usual estimates. In summing up the prognosis and treatment of

these growths Dr. Deaver points to an experience with 241 operations without a death, which assures the claim of safety for the operative forms of treatment. In view of the fact that recurrences in the same breast or on the other side were noted in several cases, a more radical treatment of benign mammary tumors, especially in women near the end of the child-bearing period, seems to be indicated; in fact Deaver firmly believes that when a tumor appears in the breast, it is an indication of the susceptibility of the entire mammary tissues to the formation of neoplasms and if simple excision is performed the patient should be kept under observation for an indefinite period of time. He also states that it is good surgical practice to remove all benign tumors when such removal does not endanger the life of the patient because the diagnosis is rarely certain and malignant degeneration is always possible.

The importance of mammary carcinoma calls for the extended consideration given to the subject. The authors regard the matter as a disheartening one because, notwithstanding the much vaunted progress of modern medicine and surgery, the mystery of malignant disease of the breast has not been penetrated. The nomenclature of mammary carcinoma has been much abused and a list of fifty-four names is presented to show the complicated terminology. Deaver proposes the following classification, which includes all the varieties of mammary carcinoma that are sufficiently well marked in a pathological sense to form distinct species: carcinoma simplex, scirrhus carcinoma, medullary carcinoma, adenocarcinoma, gelatinous carcinoma and squamous-cell carcinoma. A series of 575 cases from the German Hospital in Philadelphia has been used as a basis for the preparation of this chapter of the book and it is interesting to note that 1.5 per cent. of malignant mammary carcinoma occurred in men. The pathology, metastases, incidence as to age, race, trauma, etc., are carefully considered as well as the symptoms, diagnosis and prognosis. Observations and information as to breast tumors are or ought to be, so thoroughly appreciated that, as Dr. Deaver well says in his preface, a death from external cancer should be the exception rather than the rule and it should be universally recognized and admitted that to temporize with a suspicion of malignant disease is criminal. Of the cause of breast cancer and its cure we seem to be practically as ignorant as our forefathers, so that radical removal of the breast must remain the treatment of necessity rather than choice, although radiation, which is ably discussed in a separate chapter by Dr. Pfähler seems to offer some hope for nonoperative methods of treatment.

As regards prognosis, in the authors' series of 506 operated cases there were five primary deaths (0.98 per cent.), one each from pneumonia, uremia and sepsis, and two from chronic endocarditis. The end results of this series were known in only 150 cases, among which 34 per cent. were well three years after operation and 26 per cent. five years afterward. Although there has been a small increase in the percentage of "cures" during the last twenty years, Deaver thinks the results fail to show the decided improvement which the



high perfection of modern operative technic would seem to warrant. He thinks the better results are merely due to the fact that patients come to operation earlier and that there are many factors influencing the prognosis, including age, degree of malignancy, duration and the involvement of the lymphatic system. The indications for operative treatment are very clearly presented, the cases being divided into several classes according to symptoms and progress of the disease.

In tracing the development of the radical procedure for the removal of a cancerous breast, due credit is given to Dr. Halsted of Baltimore, who was among the first to insist on the complete ablation of the pectoral muscles in every case. Willy Meyer of New York developed a similar procedure independently at about the same time. Deaver employs the Halsted method as later modified but does not use skin grafting, closing the wound primarily. The description of the other accepted operative methods adds to the completeness of this chapter.

The nonoperative treatment of the breast is ably discussed by Dr. Pfähler of Philadelphia who considers that this method should be reserved for cases in which there is a distinct contraindication to operation. Pfähler believes that operative cases should be radically treated as promptly as possible and in all instances supplementary, active x-ray treatment instituted. Fulguration in the open wound has also been shown to be of great value in the inoperable cases. Röntgen rays or radium combined in some instances with electro-coagulation or caustics, etc., will prolong the life of the patient and increase the comfort.

In conclusion great credit must be given to the authors of this monumental work for the skill and industry exhibited in its compilation. In addition to their observations, the numerous collected cases and the extensive bibliographical references are concrete evidences of the enormous labor expended. The work seems so complete as to leave little opportunity for any future writers to enlarge upon its scope. The book is well printed and quite satisfactorily illustrated.

#### DISORDERS OF THE SEXUAL FUNCTION IN THE MALE AND FEMALE.

By MAX HÜHNER, M. D., Chief of Clinic, Genitourinary Department, Mount Sinai Hospital Dispensary, New York City; formerly, Attending Genitourinary Surgeon, Bellevue Hospital, Out-patient Department and Assistant Gynecologist, Mount Sinai Hospital Dispensary, New York City; Member, American Urological Association, Fellow of the New York Academy of Medicine, etc. F. A. Davis Company, Philadelphia, 1916. Price \$3.00 net.

The treatment of disorders of the sexual function constitutes an important branch of medical practice which falls into the domain of the family physician more often perhaps than the specialist. An apparently insignificant lesion may cause more trouble than the more marked gross pathological changes. Unfortunately the neurologist to whom most of the cases of sexual neuroses go is quite



incapable of making the necessary examination and, although his advice may be valuable it should be subordinated to the other.

Dr. Hühner's book presents in a very brief and satisfactory manner the principal anomalies associated with the sexual life of both sexes and constitutes a very readable book for both the general practitioner and the specialist. It is of importance to the gynecologist because among the sexual anomalies encountered in his patients the necessity exists for an inquiry directed toward both sexes. This precaution is frequently overlooked. A very complete bibliography concludes this concise, but very satisfactory work.

OBSTETRICS, NORMAL AND OPERATIVE. By GEORGE PEASLEE SHEARS, B. S., M. D. Second Revised Edition. 419 Illustrations. J. B. Lippincott Company, Philadelphia and London. 1917.

It is a tribute to Dr. Shears' practical and attractive work that a second edition has so soon been called for. The late Dr. Shears' extensive experience and enthusiastic interest in obstetrics has resulted in a book containing much useful information for the student and practitioner. The work of revision has been done by Dr. E. E. Shears.

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## BRIEF OF CURRENT LITERATURE.

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### OBSTETRICS.

**Chronic Valvular Heart Disease in Pregnancy and Labor.**—A study by F. S. Kellogg (*Bost. Med. & Surg. Jour.*, 1917, clxxvii, 398) of about 30,000 pregnant women shows that 1 to 2 per cent. of them have chronic endocarditis. Fifteen to 20 per cent. show some decompensation under prenatal care, half show first-degree decompensation, half second-degree decompensation. Cases with stenosis of the mitral valve, with or without insufficiency are far likelier to decompensate in pregnancy than cases with simple insufficiency. The maternal mortality of chronic valvular disease in pregnancy is 2 per cent. The maternal mortality of cases showing second-degree decompensation, requiring induction, and second-degree decompensation in labor, is 45 per cent. Mitral stenosis is almost always present in fatal cases. Fetal mortality runs from 10 per cent., in a series including all cases, to 40 per cent. in cases with second-degree decompensation. Half of these cases not under good previous care for their heart condition, which show decompensation, will recover sufficiently under medical treatment, rest and the proper regulation of their lives so that they do not again decompensate, and so that they will stand any appropriate method of delivery at term. Many chronic valvular heart cases compensated and with only slight degrees of decompensation and some with second-degree decompensation will safely deliver themselves

if allowed to. Though this fact is undeniably true, theoretically, and with what data we have at hand, it should not be allowed. Normal delivery and *accouchement forcé* have no place in the treatment of chronic valvular heart cases in pregnancy or labor. It is not justifiable to attempt to carry a woman who is decompensated to term for the sake of her baby unless she reacts favorably to treatment almost immediately, especially as the fetal mortality in these cases is so high that we overrisk the mother for the sake of a problematical child.

**Antepartum Mammary Hyperemia.**—The case reported by G. W. Kosmak (*N. Y. State Jour. Med.*, 1917, xvii, 464) was a pregnant woman admitted to the hospital because she had large, painful, hard breasts that had become so during her pregnancy. Although the most prominent symptom pointed to an obstruction of the venous circulation, physical and x-ray examinations failed to disclose any clue to the same. The finding of an intraabdominal mass in the upper abdomen after delivery makes it probable that an intestinal carcinoma may have been the primary focus with metastases in the mediastinal lymph nodes. The occurrence of a progressive mammary hyperemia during pregnancy should lead one to consider the possibility of a process similar to that observed in this case and a guarded prognosis should be given as to its subsidence and recovery.

#### GYNECOLOGY AND ABDOMINAL SURGERY.

**Complement-fixation Reaction Applied to Leukorrhea.**—The principle of the test involved is that of the Bordet-Gengou complement-fixation reaction. The antibody of the bacteriolytic system is supplied by commercial antigonococcic horse serum, and the antigen is the unknown element. This antigen is embodied in the suspension of the leukorrheal discharge which, although gonococci may be few, nevertheless contains the products of their interaction with the tissue and also their own autolytic products. It is possible to determine at its very inception a gonorrheal infection in male or female, and similarly to determine the time of disappearance of the organism. A specimen of the discharge is collected from the cervix and vagina on a long cotton swab. The swab is immersed in about 2 c.c. of physiologic sodium chloride solution. The discharge is freed from the swab and ground finely with the sodium chloride solution in a glass mortar. The suspension thus prepared is permitted to stand overnight and then heated at 56° C. (132.8° F.) for half an hour. In appearance a properly prepared suspension exhibits a faint turbidity, to obtain which it may be necessary to add more sodium chloride solution. Floating particles may be removed by a few seconds of centrifuging. A positive and a negative control should be used, each specimen requiring ten tubes, consisting of a first and second row of four tubes, and single tubes in the third and fourth rows. In all tubes are placed 2 c.c. of physiologic sodium chloride solution. To the first tubes of the first and second rows is added 1 minim of the suspension,

in the second tube 3 minims, in the third 5 minims, in the fourth 7 minims. In the single tube of the third row are placed 7 minims of the suspension. In all the first row tubes and the single tube of the fourth row is now placed 1 minim of the properly standardized antigonococcic serum. In all tubes excepting the single third row tube is now placed guinea-pig serum (complement). The specimens are now incubated in the water bath for one-half hour at 37° C. (98.6° F.), when the antishoop amboceptor and sheep corpuscles are added and reincubated. Readings are then taken. The first row constitutes the test, the degree of inhibition of hemolysis indicating the degree of positiveness, if the corresponding second row, which is the control for the test row, has completely hemolyzed. The third row tube is a control on a possible hemolytic tendency of the specimen to be tested, whereas the fourth row tube is a control on the anticomplementary action of the antigonococcic serum. In only two of forty-seven cases of leukorrhea studied by L. D. Smith and F. L. Stone (*Jour. A. M. A.*, 1917, lxix, 1418) was a negative test obtained when there was evidence of gonorrhea, one of these having presented a Bartholinian abscess that had been cured. In these two instances slide examinations and blood complement-fixation tests also were negative. In seventeen cases with positive clinical evidence and negative slide examinations, complement-fixation reaction was positive. In four cases without clinical appearance of gonorrhea, the test was positive in two and doubtful in two. Five cases doubtful clinically yielded positive reactions. Three cases with positive clinical evidence and positive Smith test exhibited positive blood complement-fixation reactions.

**Handling of Early and Doubtful Cases of Cancer.**—As a result of the analysis of the replies received by R. B. Greenough (*Annals Surg.*, 1917, lvi, 385) from 134 members of the American Surgical Association, the American Gynecological Association, the American Association for Cancer Research and the American Society for the Control of Cancer, the following recommendations are gathered. For suspected, but doubtful lesions of the *cervix of the uterus*: (a) excision of the lesion; (b) amputation of the cervix; (c) excision of a fragment of tissue, with cauterization. Opinion is not conclusive. Some advise hysterectomy on suspicion of malignancy. This is undoubtedly radical, but preserves the patient her best chance of cure. Others prefer the exploratory excision of tissue, or amputation of the cervix, to be followed immediately by the complete operation if frozen section shows cancer. For suspected, but doubtful lesions of the *fundus of the uterus*: curettage. Opinion divided. Some advise hysterectomy on suspicion of malignancy. Others advise curettage and immediate frozen section diagnosis. For suspected, but doubtful lesions of the *ovary*: oöphorectomy. Here the difference in the severity of the possible operations for benign and for malignant disease is not sufficient to make an exploratory incision into suspected cancer tissue a necessary or advisable procedure. For suspected, but doubtful lesions of the *breast*: local excision of tumors of the breast suspected of being malignant and submission

of the tissue for subsequent pathological report cannot be recommended. If direct incision with frozen section diagnosis is not possible, amputation of the whole breast, with dissection of the axilla, should be performed in suspected cancer in women over thirty-five years of age. This is endorsed by 90 per cent. of the replies.

**Radical Cautery Operation in Breast Cancer.**—J. F. Percy (*Annals Surg.*, 1917, lvi, 397) advocates the use of the cautery for amputation of the cancerous breast because the hot knife does not disseminate carcinoma and because the heat has an influence for good considerably beyond the area involved in the immediate contact with the cautery knife. Freedom from hemorrhage is a very important advantage. The four factors most useful in the heat technic are: Mark out on the iodine-covered skin, with the cautery knife, the limits of the incision to be made. Do not cut with the cautery knife from above downward into the skin in following this line, but from within outward. This can best be done by lifting the skin up with a tenaculum forceps and pushing the hot knife into and under the skin, and cutting from within outward. To do otherwise causes too great a sloughing of the edges of the skin. The drainage hole should also be made by pushing the cautery knife through the skin from within outward. In dissecting about the axillary vessels and brachial plexus, hold the tissues that are to be removed with the fingers of the free hand encased in a medium-weight rubber glove, and keep the fingers close to the cautery knife. This is the most practical way of gaging the degree of temperature that the tissues and blood-vessels will stand, without being injured. If the axillary vein and artery are not actually touched for too long a time with the hot knife, they will remain uninjured. Apply the heat until all the tissues that were fixed by the disease are freely movable. The two most important factors in the after-treatment are: First, to keep the wound clean, which can easily be done by alternating the use of adhesive-plaster covering with "eusol" solution, and exposure to the direct rays of the sun; and, second, to keep the arm in a vertical position alongside of the head. This prevents both edema and cicatricial contraction.

**Surgical Hemostatis of the Female Pelvis.**—By injecting into the arterial system a mixture of red lead and albolene, after the ligation of certain vessels and after the removal of certain ligatures, making further injections and taking other radiographs. H. D. Furniss and W. H. Meyer (*N. Y. State Jour. Med.*, 1917, xvii, 462) demonstrated that with ligation of the common iliacs and the ovarian arteries, the only vessel filled in the pelvis is the superior hemorrhoidal branch of the inferior mesenteric. Release of the ligature on the external iliac makes little or no difference in the filling of the pelvic vessels. The internal iliacs can be filled through only one ovarian, and the ovarian through only one internal iliac. Branches of the last lumbar arteries and of the gluteal and ileo-lumbar branches of the internal iliac can be seen in close proximity, but the passage of the injected mass from one to the other cannot be demonstrated. Therefore, it would seem that a most extensive and possibly danger-



ous ischemia would be produced by ligation of the ovarians and the common iliacs, or almost as complete an ischemia by ligation of the ovarians and the internal iliacs. Bleeding would be lessened by ligation of one ovarian and both internal iliacs, or both ovarians and one internal iliac, without seriously endangering the nutrition of the pelvis, provided that structures through which the vessels crossed the median line were not removed. Possibly ligation of the ovarian and both internal iliacs during a hysterectomy would leave an inadequate blood supply, and ligation of the ovarian and the uterines would give good hemostasis and yet leave sufficient blood supply.

**Advantage of Cholecystectomy in Avoidance of Adhesions in Gall-bladder Surgery.**—A. M. Willis (*Annals Surg.*, 1917, lxvi, 411) has been impressed with the much greater frequency of adhesions following gall-bladder surgery than elsewhere in the abdominal cavity. He has conducted in dogs a series of five groups of experiments: (1) cholecystectomy without the spilling of bile in the abdominal cavity; (2) cholecystectomy with the emptying of bile in the abdominal cavity; (3) cholecystotomy with drainage; (4) cholecystectomy with bile infected with *B. typhosus* smeared over gall-bladder area—drainage; (5) cholecystostomy in a gall-bladder previously infected with *B. coli*. From his results he concludes that in some dogs bile may stimulate a moderate amount of adhesions, while in others it may institute a profuse fibroelastic tissue reaction in the peritoneal cavity. It is impossible to open and explore a gall-bladder without soiling the surrounding peritoneal surfaces with bile. Therefore, this exploration is followed by crippling adhesions regardless of whether the gall-bladder is diseased or healthy, or whether it is followed by cholecystectomy or cholecystostomy. The gall-bladder should not be explored by incision, but in uncertain cases it is better to do a cholecystectomy without drainage. In a well-performed cholecystectomy where no bile is split in the cavity and no drain of the liver is used, the trauma of operations seems to be an insignificant factor in stirring up adhesions. On the other hand, in cholecystostomy and cholecystectomy where we use a drain, and have a spilling of bile, adhesions invariably follow. The writer feels that bile is an important factor in the production of adhesions, and that it is of the utmost importance that the irritating and often infected bile should not be allowed to come in contact with peritoneum.

# DEPARTMENT OF PEDIATRICS.

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## ORIGINAL COMMUNICATION.

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### REPORT ON TWO SUCCESSFULLY OPERATED CASES OF MENINGOCELE.\*

BY

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(With six illustrations.)

THERE are three difficulties associated with the management of meningocele cases. The first is classification, the second is treatment and the third is prognosis.

The text-books have little to say about spina bifida and its subdivisions, but in order to operate successfully upon this type of malformation, one must possess a knowledge of the pathology of the condition. Binnie(1) classifies them as follows:

1. Meningocele.
2. Myelo-cystocele.
3. Myelocele.

(a) Meningocele signifies a defect of the posterior wall of the spinal canal with a hernia of the dura, of the arachnoid, or of the pia mater through the osseous defect—fluid existing in the tumor.

(b) Myelo-cystocele is a defect in the posterior wall of the spinal canal and in the corresponding portion of the dura (the posterior surface of the cord being split or absent). Cerebrospinal fluid collects between pia and arachnoid; nerve roots extend forward through sac and may hang loose in the fluid or may be situated in the base of the sac contiguous to the wall.

(c) Myelocele is a defect in the skin, in the posterior osseous wall of the spinal canal and also in the corresponding portion of the dura, the arachnoid and pia are intact and a hernia is formed by having

\* Presented before the Georgia Medical Society, Savannah, Georgia, May 22, 1917.

the arachnoid and pia as sac. The differential diagnosis between these three is difficult and often cannot be made at all.

In cranial meningocele the prognosis is bad if tumor remains untreated, for ulceration and rupture usually occurs and septic meningitis results.

In spinal meningocele, if untreated, the prognosis is nearly as bad as in the other forms of spina-bifida, as it almost invariably increases in size, ulcerates and ruptures, followed by septic meningitis, although here and there cases of spontaneous rupture and cure are reported(2). If these cases are operated upon, the prognosis is good, even though the closure of the defect is followed by hydrocephalus, for this usually subsides.

Some text-books advise the use of Morton's fluid for injection, which consists of iodine gr. 10, potassium iodide gr. 30, glycerine oz. 1.

Mayo Robson has reported twenty cases of meningocele, and states that a plastic operation gives better results and is safer than injections(3).

Holt says: "In meningocele, when the tumor is covered by integument, the prognosis is good; surgery should not be done under six months(4)."

I wish to report two cases which I have operated on, with recovery of both patients:

CASE I.—Clifford, May A., age fourteen months (Fig. 1.) Father and mother both living and in good health. Tumor present at birth, but "became larger, then somewhat smaller, and lately has been getting larger again." Child apparently normal otherwise. The tumor is sensitive to touch and the child cries when slightest pressure is made upon it; the skin is red and quite thin at the lower and outer aspect of tumor, thick and normal in appearance at attachment to skull. Fig. 2, skiagraph of tumor, cleft in skull slightly re-touched on negative.

*Operation.*—Skin carefully separated from membrane by transverse incision over tumor, cerebrospinal fluid escaped through slight puncture in the very thin membrane. At base of tumor fair-sized vein and artery emerged through cleft, nerve roots extended out into the wall of tumor; these were carefully separated from membranous wall and replaced into cleft, redundant membranous wall cut away. A chromic catgut ligature was tied about base, which was also replaced into cleft. For protection, a thin silver plate shown in skiagraph, Fig. 3, was placed over cleft. Fig. 4, child after operation, Nov. 14, 1915. Recovery uneventful, child normal and well two years after operation, plate still *in situ*.

CASE II.—Clara K. (Fig. 5), age eleven months. Family history, negative. Tumor present from birth. Child apparently normal otherwise. Same technic as in previous operation. More and



FIG. 1.—Showing meningocele before operation, Oct. 20, 1915.



FIG. 2.—Radiograph of skull in Case I, before operation.



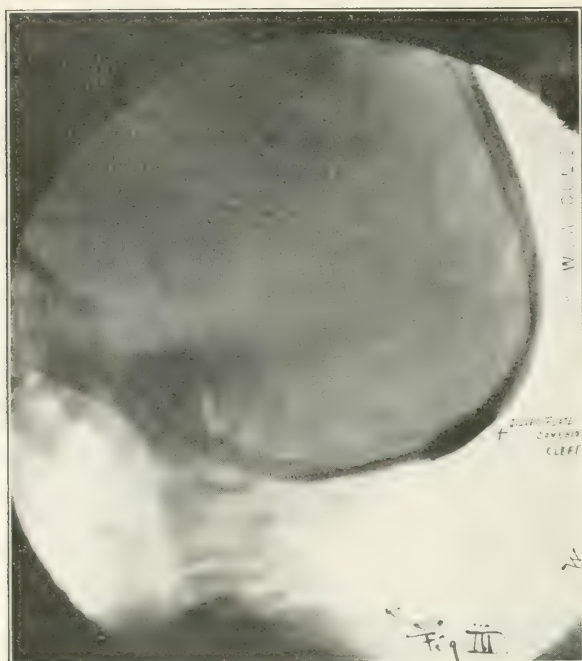


FIG. 3.—Radiograph of skull in Case I, after operation, showing position of silver plate over cleft.



FIG. 4.—Child after operation (Case I), Nov. 14, 1915.



FIG. 5.—Child with spina bifida before operation (Case II), June 15, 1916.



FIG. 6.—Child after operation (Case II), Oct. 8, 1917.

larger nerve roots were found than in Case I. These were carefully separated from tumor wall and replaced through cleft in spinal column. Chromic catgut ligature was tied securely around base of sac. Cleft about the size of half dollar. Silver plate was placed over cleft, but was removed two weeks later on account of skin infection. Child's temperature rose to 105° F. night following operation, probably on account of loss of cerebrospinal fluid during operation, but was normal on the following afternoon. Fig. 6, child perfectly well and normal sixteen months after operation. In neither case was there any leakage following operation.

The main points in operating upon this class of cases are: (a) careful separation of nerve roots from sac wall and base of sac; the nerve roots being intimately blended with the sac. (b) Perfect hemostasis and asepsis. (c) Absolute closure of sac, so that leakage of spinal fluid cannot occur.

#### SUMMARY.

Operations are always indicated, as over 90 per cent. of children thus afflicted die within the first year, if untreated. To close the bony defect, surgeons have used celluloid plates, bone grafts; both autogenous and heterogenous, and silver plates. These add gravity to the operation, and bone grafts often fail to live in the new position, and we now know that they are not necessary, as the muscles and fascia of the back afford strong and efficient covering.

#### REFERENCES.

1. Binnie. *Operative Surgery*, 3d edition.
2. Johnson. *Operative Therapeutics*, vol. iii.
3. Robson. *Annals of Surgery*, 1895, xxii, 81.
4. Holt. *Infancy and Childhood*.

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## BRIEF OF CURRENT LITERATURE.

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#### DISEASES OF CHILDREN.

**Immune Serum in Treatment of Whooping Cough.**—Injections of human blood were given by A. Bleyer (*Amer. Jour. Med. Sci.*, 1917, cliv, 39) in the early weeks of pertussis in 45 cases. These were divided into three groups of 15 cases each. In Group A the blood injected was from persons who were convalescent or who had recovered from whooping cough within three months. In Group B the blood was from persons who had had the disease at more remote periods, and in Group C from persons who, so far as they knew, had never had it. Groups B and C were designed as controls to A. In Group A of 15 children whose average age was

twenty-eight months, who received convalescent's blood during the early weeks of whooping cough, there occurred no deaths and no serious complications; the course of the disease was, however, in no definite way different than is usually seen, and was not appreciably influenced by the treatment except in 3. In Group B, in Case I, in which the blood used was from the mother who had had pertussis twenty years before, quite as satisfactory improvement occurred as in any case in Group A; in this group there were two pneumonias which recovered. There were also two pneumonias in Group C with one death, and in this group there was one case which seemed to have been very favorably affected by the injections of normal blood. For lack of consistency in the results obtained in these cases of whooping cough it is not possible to ascribe any of them to a specific action of the blood injected.

**Production of an Antipoliomyelitis Serum in Horses.**—E. C. Rosenow (*Jour. A. M. A.*, 1917, lxix, 261) reports his experiments in the immunization of horses with cultures of the pleomorphic streptococcus from poliomyelitis, the results of experiments in neutralizing and protecting against virus with the immune serums thus obtained, and the findings of agglutination and complement-deviation studies. He shows that the serum of horses immunized with aerobic cultures of the pleomorphic streptococcus from both poliomyelitis in man and experimental poliomyelitis in the monkey developed specific antibodies, agglutinins and complement-deviating properties, the agglutinins appearing to be present in large amount because the serums cross-agglutinate these strains specifically in very high dilutions. The serum of patients and monkeys which have recovered from attacks of poliomyelitis cross-agglutinates specifically many, but not all, of these strains in the lower dilutions. What is of greatest significance, the serum of the horse immunized with recently isolated strains from experimental poliomyelitis in the monkey appears to have developed neutralizing, protective and curative power against the virus of poliomyelitis.

The same writer (*Jour. A. M. A.*, 1917, lxix, 1074) has tested the effect of this serum in forty-four patients during the recent epidemic of anterior poliomyelitis. The routine procedure consists of making a spinal puncture for diagnostic tests and for relief of abnormal intraspinal pressure, and of injecting the serum. From 5 to 30 c.c. of spinal fluid are allowed to escape, depending on the age of the patient and the amount of pressure. The fluid is made to flow slowly because it is believed that rapid withdrawal might be harmful. The cell count and Noguchi's globulin test are made at the bedside, and if positive, the injection of serum is given at once. The serum is activated with complement by adding 1 part of fresh guinea-pig serum to 9 parts of the immune serum and incubating at 37 degrees for one hour. It is then diluted with equal parts of 0.85 per cent. salt solution. The diluted serum is injected slowly into a suitable superficial vein not later than thirty-six hours after activation. Approximately 2 c.c. of the mixture are injected per minute of time. The dose is varied according to the age of the



patient and severity of the symptoms. Babies from about one to two years of age are given from 3 to 7 c.c. of serum at each injection, that is, 6 to 14 c.c. of the mixture; children from two to five years of age from 7 to 10 c.c., and older individuals from 10 to 20 c.c. The injections are repeated in from eight to twenty-four hours if necessary. The writer says that the apparent good effects from the injection of serum are often striking. The headache, nervousness, restlessness and tremor often disappear promptly. The temperature and pulse rate are lowered. A beginning paralysis often disappears in an astonishingly short time. A rapidly progressing paralysis is often arrested and improvement is unusually rapid. The postparalytic pains do not appear or are comparatively mild.

**Specific Serum Therapy of Epidemic Poliomyelitis.**—J. W. Nuzum and R. G. Willy (*Jour. A. M. A.*, 1917, lxi, 1247) describe the mode of production, technic of administration and results obtained in cases treated with antipoliomyelitic serum prepared in the horse by injections of the poliomyelitic coccus. Of 159 patients receiving serum in all stages of the disease, nineteen died, a mortality of 11.9 per cent. Among 100 cases occurring during the same period of time, in which the patients did not receive serum, thirty-eight patients died, a mortality of 38 per cent. Excluding 7 cases presenting respiratory paralysis on admission, with eleven deaths the mortality rate was 7.2 per cent. During this same period of time a total of 301 cases were reported to the Health Department with ninety-seven deaths—a mortality of 32 per cent. This series of treated cases suffices to demonstrate the harmlessness of serum treatment when the serum is free from hemoglobin, sterile to repeated cultures, and the injections are slowly made and all known rules of precaution are observed. The serum appears to possess the power of definitely preventing the onset of paralysis when administered early in the disease. In ten undoubted instances of poliomyelitis in which no paralysis was detected at the time serum was administered, prevention of paralysis and complete recovery resulted in 100 per cent. The action of the serum is more definite in arresting the extension of paralysis and diminishing the severity than in effecting its disappearance. The earlier the serum is administered, the more striking are the results obtained. Serum should be injected intraspinally in small doses and at the same time intravenously in larger amounts. The temperature has been employed as a guide to the dosage. The injection of serum is followed by a critical fall in the patient's temperature. Coincident with this there occurs a slowing of the pulse rate, and usually other definite clinical evidence of general improvement. In doubtful early cases the decision to use serum should rest on the bacteriologic, chemical and microscopic examination of the cerebrospinal fluid.

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## ORIGINAL COMMUNICATIONS.

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THE EVOLUTION OF THE MALE MIDWIFE, WITH SOME  
REMARKS ON THE OBSTETRICAL LITERATURE OF  
OTHER AGES.

BY

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THE art of midwifery is coeval with the history of mankind. Midwifery has been essentially the same in all countries and ages since the beginning of the world. That this is true may be seen from the structure of the human frame and the emphatic testimony of the primeval curse upon woman, "that in sorrow she should bring forth children." The testimony and allusions of all the older authorities render it indisputable that women were in the beginning the chief, if not the sole, practitioners in midwifery, and that they also assumed the right of treating the diseases peculiar to their sex, as well during the pregnant state as at other periods.

"That woman bringeth forth her children in sorrow" appears to be a law of the function of reproduction imposed upon the women of all tribes and countries and times. From the remotest periods the occurrence of a human birth has always excited something of alarm and sympathy. From the dictates of such sympathies and apprehensions the first rude efforts of the art of midwifery took their origin.

In the earlier ages of the world, while the human race continued to live according to the suggestions of a natural instinct, without necessity or motive for hard labor, under the blessings of a kinder climate and exposed only to the few influences and accidents inseparable from the simplest wants and the simplest institutions, it cannot be supposed that there was much need of trained midwives.

In such a state of society woman rendered to one another such kindly services as the function of natural labor would require. In the course of time there would be some one in a community professing in such matters to be more intelligent or experienced than her ordinary neighbors, who invoked for herself the office of midwife.

The earliest reference to midwifery in Holy Writ is in Chapter xxxv of Genesis, where we are told that Rachel, the wife of Jacob, died in giving birth to a son, although comforted by the midwife that she need not be alarmed over the outcome. In the latter verses of Chapter xxxviii of the same book there occurs another reference to midwifery in which is described a rare occurrence. It is a case of twins, born to Tamar, the widow of Er, son of Judah, and one of the twins presenting by the arm, on which, to distinguish it as the first born, the midwife tied a scarlet thread. However, the beribboned arm receded, the second child came down, and was eventually expelled first.

Moses, the Jewish legislator, who lived 1000 years before the time of Hippocrates, speaks of midwives as a respectable and distinct body amongst the Hebrews. That Hebrew women were accustomed to be delivered sitting upon stools we learn from the first chapter of Exodus. The labors of Hebrew women were quickly terminated. This is purely presumptive, but it may be inferred that it was so, since it was stated by the two midwives, Shiprah and Puah, whom Pharaoh had commanded to kill all the male children, that the Hebrew women were not as the Egyptian women, but were delivered 'ere the midwives came in unto them. Additional facts relating to obstetrics exist in the fourth chapter of the first book of Samuel, where we are told that, through grief, premature labor, terminating fatally, was brought on in the wife of Phineas, the high priest's son. The same comforting assurance of *fear not* was applied to her by the midwives as in the case of Rachel. The assurance of *no danger* was the customary form of greeting under such circumstances, and may be regarded as not so much a matter of inspiring confidence as of ignorance in the face of danger. In Chapter xvi of Ezekiel a very singular allusion is made—that is the comparison of Jerusalem to a wretched infant whose navel string is declared to be uncut on the day of its nativity. It is possible that the Jews were in the habit of dividing and not of placing a ligature upon the cord, for mention is made of swaddling and salting. As this was written some 594 years B. C., the practice of that period evidently anticipated some of the antiseptic rules of the present day.

That the conditions referred to above should have existed is in some measure a mark of civilization, for in savage or primitive states the process of child-bearing is viewed as a physiological one, needing no help. In Southey's *Tale of Paraguay*, speaking of Monnema, wife of Quia'ra, the primitiveness of childbirth from a physiological standpoint is referred to most graphically:

"But human help she needed none.

A few short throes with scarce a cry;

Upon the bank she laid her new-born son.

Then slid into the stream and bathed, and all was done."

The quaint customs of certain tribes in the remote periods of savage life also point to the immunity of female suffering in childbirth. Writing of what is known as the *Couvade*, Max Müller describes some of these customs, and comments upon them thus—"Who would believe that there was a single tribe, however silly in other respects, which would carry its silliness so far as to demand that on the birth of a child the father should take to his bed while the mother attended to all the duties of the household?" Yet there are few customs more widely spread than this and better attested by the historical evidence of nearly 2000 years. The term *Couvade* has a definite meaning in that it is used to describe a man who takes the place of his wife when she is in childbed. In the thirteenth century the celebrated Marco Polo traveled through China and observed this custom. Without a doubt the knowledge of this gave rise to the couplet in *Hudibras*:

For though Chinese go to bed,

And lie in their ladies' stead.

The people called "Gold Tooth," in the confines of Burmah, are *couvades*. M. Francisque Michel tells us that the custom existed in certain parts of Biscay until recently. It is declared that the practice is still prevalent in Yunnan and among the Miris in upper Assam. The same custom has been observed among the Caribs of the West Indies, the Abipones of Central South America, the aborigines of California, in Guiana, in West Africa, and in the Indian Archipelago. Diodorus speaks of it as existing at one time in Corsica; Strabo says the custom prevailed in the north of Spain; and Appolonius Rhodius declares that the Tabarenes on the Euxine Sea observed the same:

In the Tabarenian land,

When some good woman bears her lord a babe,

'Tis *he* is swathed, and groaning put to bed;

While she arising tends his bath and serves.

Nice possets for her husband in the straw.

*Appolonius Rhodius: Argonautic Exp.*



It might be interesting to know that a singular relic of this credulity exists amongst us even in the present stage. There are not a few instances where men have seriously declared that the fact of the wife's pregnancy has always been known to them in the various disorders and ills which they themselves suffer on such occasions. In this connection the sympathetic morning sickness of the husband is most interesting.

The subject of midwifery in its other and, perhaps, equally interesting phases is so very interesting, that the writer feels he must ask the indulgence of the reader for his frequent wanderings far afield from the main discussion.

At this juncture it might be well to review the obstetrical literature of other ages. It would appear from the frequent allusions to midwives and their duties in the works of Hippocrates, Plato, Aristotle, the elder Pliny, Galen, and Aetius, that midwifery as a calling was held in high esteem. Aetius transcribes some chapters from the works of a female practitioner by the name of Aspasia, containing directions for the management of women in natural labor. In Rome, also, midwives were persons of some importance, as would appear from the writings of Terrence and Plautus.

It is to Hippocrates that we are indebted for the first authentic information concerning the problem of midwifery. This author describes in detail certain symptoms accompanying menstrual derangements, and the signs which precede uterine hemorrhage. As causes leading to abortion he enumerates many recognized to-day. His observations regarding puerperal fever are summarized in a most clear and distinct manner. Hippocrates calls attention to the various warning signs of eclampsia, such as headaches, fullness in the head, syncope, and a tendency to sleep, and expatiates upon their significance.

As to operative midwifery, the rules laid down by Hippocrates serve rather to increase the dangers of parturition than to diminish its difficulties, and stand as lamentable proof of the little progress which had been made in the manual side of the art up to his time. For instance, if the presentation is any other than the head he advises that the presenting part be pushed up and the head brought down. If labor was difficult or tedious the patient was to be shaken by two assistants until the child had been expelled. Failing to effect delivery by these means Hippocrates directs that the child's bulk be diminished by cutting instruments, and then to effect delivery by the application of the crotchet to either shoulder or clavicle. In dealing with the delivery of the placenta Hippocrates suggests several measures, but cautions against the use of force.

The keen obstetrical observations of Aristotle are, indeed, worthy of our notice. In a treatise entitled *The Generation of Animals* he deals with the signs of puberty, of the physiological side of menstruation, the symptoms of pregnancy, of the situation of the fetus in utero, of natural head presentations, and of the fetal development and sustenance through the placental cord.

Celsus, a Roman physician, in the time of Augustus and Tiberius, in his excellent work "*De Medicina*," offers some very practical observations on midwifery. In the seventh book Celsus describes the operative procedure to be followed in cleaning the parturient canal of tumors and other obstructive processes. He urged the necessity of antepartum prophylaxis. And it is to Celsus that we are indebted for many valuable hints regarding the most effective means of doing podalic version. Celsus declares that delivery by the feet was not at all a difficult feat. This Roman physician contrived a most admirable instrument for decapitation. Students of obstetrics will recognize in the instrument of Celsus the rude original of the instrument in present-day use. Celsus did not agree with certain Hippocratic teachings regarding delivery of the placenta. Patience in delivery of the placenta as advocated by Hippocrates did not meet with favor from Celsus. The latter believed in hasty delivery of the placenta.

The next author entitled to our notice is Aretaeus, a physician of Cappadocia, who lived about the time of Nero, A. D. 80. In his principal work he devotes a chapter to diseases of the uterus, and assigns as the causation of *prolapsus uteri* a relaxation of the uterine ligaments. Aretaeus was more interested in gynecology than midwifery.

Moschion, who is said to also have lived during the reign of Nero, follows Aretaeus. Pliny and Galen make reference to Moschion and his endeavors in the field of science. This author treats of the female genitalia and of the diseases peculiar to the sex. The question of natural and difficult labors he deals with in a very interesting manner. In the management of difficult labor he orders the evacuation of the bowels by an enema, and of the bladder by catheterization. In no unmeasured terms does Moschion condemn the practice of shaking the patient to facilitate delivery according to the Hippocratic practice. After delivery he advises the cord to be pulled gently from side to side to promote delivery of the placenta. Should the placenta not come away by these means Moschion advises that the hand be introduced and the placenta extracted if detached and loose; but should it remain firmly attached to the uterine walls

he advises that extreme care be employed in its separation. Moschion in a brief way deals also with the management of children.

Soranus, of Ephesus, who lived in the time of the Emperor Trajan, in the early part of the second century, next engages our attention. He left a good description of the uterus, and demonstrated the nonexistence of cotyledons in the human subject.

Rufus, also of Ephesus, lived at nearly the same time as Soranus. In his description of the womb he expressly calls attention to the passages in the broad ligaments (Fallopian tubes) a discovery subsequently claimed by Galen.

Galen was born at Pergamus, and flourished during the reign of the Emperor Adrian, about 600 years after Hippocrates. He directs attention to the contractile efforts of the uterus while labor is going on, and ridicules the then prevailing notion of the uterus wandering about the body.

During the reign of the Emperor Julian, Oribasius flourished, and was held in high esteem in scientific circles. He collected a good deal of data along gynecological lines. His remarks concerning certain preliminaries in reduction of a prolapsed uterus reflect a keen technical judgment.

Aetius was the next writer of importance on the subject of midwifery. He lived at the end of the fifth and beginning of the sixth century. Aetius was one of the first obstetrical writers to call attention to the symphyseal separation at the time of labor.

The last of the old Greek authors, Paulus of Aegina, flourished in the beginning of the seventh century. He was the most original and trustworthy of medical observers since the days of Hippocrates. He understood perfectly the mechanism of the child's transit through the pelvic canal, so that he, in truth, blazed the trail for what Smellie, first of all the moderns, was later to accomplish in instrumental obstetrics.

We have now arrived at that long and gloomy period of history which, as far as literature and science are concerned, has been aptly distinguished by the name of the Dark Ages. On account of the many invasions from the northern nations, and the constant warring of the peoples, the arts first languished, and finally deserted the western division of the empire. For a time Alexandria was the seat of science and the asylum of the fine arts, but in the sacking of this city by the Saracens 640 A. D., the once famous library was consigned to the flames. Through this act of barbarism that vast storehouse of knowledge of the ancients, both in literature and in arts, was lost to succeeding ages. After this world

calamity a period of two centuries was to elapse before medicine made any further progress.

Arabian medicine now became the vogue. The works of the Arabian writers chiefly consisted of voluminous excerpts from the Greek authors, manuscripts of whose writings had been preserved from pillage and flame. Serapion, who wrote on the diseases of pregnant women, was one of the first of the new Arabian school.

In the tenth century, the use of the fillet in difficult births was suggested by Rhazes, a physician of Bagdad. This same physician was one of the first to treat the diseases of children as a special branch of medicine.

Avicenna, a practitioner who flourished in the beginning of the eleventh century, compiled many volumes from Greek authors. He was quite an adept in the use of the fillet.

The next author entitled to our notice is Albucasis, who was acquainted with the occurrence of extrauterine gestation. In his various treatises may be found many drawings, together with a description, of two kinds of forceps of a circular form, with a row of spiked teeth on the internal surface to squeeze and crush the fetal head.

The decline of learning in the East dates from the destruction of the Egyptian caliphate by the Turks in the twelfth century, and closes our brief account of the Arabian writers.

While educational advancement for a few ages seems to have been cultivated by the Mahomedans, it must be remembered that learning was not allowed to go entirely neglected by the Christians of the West during the same period. As early as the seventh century the study of languages was encouraged at Salerno, and Charlemagne in the beginning of the ninth century founded a University at Padua, the medical school of which was held in high esteem up to this day.

In their trips to the Holy Land the Crusaders contributed indirectly to the revival of learning in Europe. The maritime states of Italy through their spreading commerce contributed also, in no small measure, in restoring to the people of Europe those arts and sciences which they had lost through the wars waged by the early barbarians.

However, it was not until the middle of the fifteenth century that literature and the arts began to show signs of reawakening. Through the invention of printing the scientific light of the ancients, as contained in the existing manuscripts, was rapidly diffused over the whole of Europe.



To the early Britons we owe much of our knowledge of the subject of midwifery. Midwives were more or less under the control of the church, in that they were licensed by the bishop, and subjected to an examination as to fitness and character. That the church exercised a protecting care and ecclesiastical guidance over midwives is evident, as certain important rites were entrusted to them as a part of their duties. As far back as the seventh century the midwife was in cases of necessity allowed to baptize newly born infants. Centuries later this privilege was revoked, it being declared "that baptism is only to be ministered by a lawful minister or deacon called to be present for that purpose, and by none others."

In 1532, Eucharius Rhodion, a German published a treatise on 'Parturition.' This work was subsequently translated into Latin and other languages, and became almost universally the "Midwife's Handbook" throughout the whole of Europe.

In the middle of the sixteenth century appeared Ambrose Parè, surgeon to several successive rulers of France, and the father of modern surgery. Parè was really the first of the moderns who contributed materially to the improvement of the obstetrical art, and the first who decided positively, and upon clear and distinct principles, in favor of the operation of turning the fetus in utero, the introduction of which into practice marks a mile stone in obstetric progress.

Up to the time of Parè the practice in breech cases had, with few exceptions, been to shake the patient vigorously and to change her position in various ways, with the intention of bringing down the head. If this procedure proved of no avail, recourse was had to mutilation of the fetus. Parè's operation of turning the feet differed materially from the method alluded to by Celsus. Parè was a strong opponent of Cesarean section.

The practice of midwifery up to the advent of Parè had been almost exclusively in the hands of females, and the advice and assistance of male practitioners being obtained only in cases of difficulty and apprehended danger.

A remarkable era in the interest of midwifery was that inaugurated by the Chamberlens during the reign of King James I, of England. In 1616 Peter Chamberlen presented to the Sovereign a petition calling attention to the lamentable state of this branch of medicine. Behind this petition there was some personal motive; such at least was attributed to him by his enemies, for later on Peter's son wrote "Fame begat me envy and secret enemies which mightily increased when my father added to me deliveries and the cure of women."

While the proposed reforms of the Chamberlens were laudable and humane, it must not be forgotten that there was a commercial side to the whole affair. In short, the Chamberlen family attempted to monopolize the practice of obstetrics among the ruling classes. Following the protest of Chamberlens the midwives themselves presented a petition resenting the proposed changes in obstetric practice. Though declamations against the ignorance and clumsiness of midwives were loud and frequent, they still continued in the same path of stubborn superstition and blind ignorance. This state of obstetric incompetency among midwives prevailed throughout the whole of Europe. In the seventeenth century the effects of the campaign for better midwifery began to show itself. Excellent texts upon midwifery were now being published. Many of these texts were written by women who took this means of criticizing their male competitors.

At this period, there was a deeply rooted prejudice to male midwives. This feeling was well nigh universal throughout the whole of Europe. In France, Julian Clement was hired to attend the mistresses of Louis XIV in their labors. The employment of Clement was kept as a secret of the household. To his first delivery Clement was conducted blindfolded, while the King was concealed among the bed curtains, and the face of the lady enveloped in a network of lace. The term "accoucheur" was given to the obstetrical world by Clement after he had, in December 1663, delivered La Vallierre. It was after this delivery that the Parisian midwives rose in protest against their most formidable competitor and subjected him to the most humiliating forms of derision and ridicule.

However, it was not until the introduction of the forceps that the midwives realized that their calling as an "exclusive female art" was being seriously threatened. All who used instruments were dubbed "instrumentarians." The dispute as to the wisdom of this mode of delivery was acrimonious. Smellie, who had introduced the use of forceps, was assailed with all the rancor and acerbity at command, and this was plentiful; his female opponents vied in the malevolence of their criticisms, and waxed eloquent in wrath. He suffered, as all medical innovators do, and as usual his detractors and critics were not all limited to the one sex. Smellie was ungainly and awkward in his manners. A prominent midwife, Mrs. Nihell, satirically alluded to Smellie's large hand in the following manner: "the delicate fist of a great horse-godmother of a he midwife." This same mild mannered lady, in the outpourings of her feelings against the man midwives, scoffs against "that multitude of dis-

ciples of Dr. Smellie, trained up at the feet of his artificial doll—in short, those self-constituted men midwives made out of broken barbers, tailors, or even pork butchers; for I know myself one of the last trade who, after passing his life in stuffing sausages, is turned an intrepid physician and man midwife.” Thus, to Clement of France, and Smellie of England the world is indebted for the male accoucheur.

The professional war between the he and the she midwives was indeed a bitter struggle. Opprobrious epithets, ridicule, and sarcasm were all employed with unremitting vigor. However, the revolutionary forces continued their work until the complaint was made that there were more men midwives than streets. Man had at last come into his own—the man midwife was now a real factor to be contended with. And, finally, obstetrics was soon to occupy its proper niche in the realms of scientific medicine.

820 BARONNE STREET.

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## SHOULD THE UTERUS BE REMOVED WHEN IT BECOMES IMPERATIVE TO INTERRUPT PREGNANCY?\*

BY

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INTERRUPTION of pregnancy is justified only when maternal life is seriously jeopardized by the further progress of gestation. In determining the method by which pregnancy is to be interrupted, the surgeon needs to consider particularly the welfare of the woman. Fetal life is so dependent upon the maternal health that, when maternal forces are so affected as to indicate the termination of the process of pregnancy, it is likely that the death of the fetus has already occurred. It is not sufficient to take into consideration only the immediate hazard which involves the woman, but it is also incumbent upon the surgeon to consider her future well-being, and to protect her against exposure to similar danger.

The clinical manifestations which call for these considerations are: serious renal disease, retinal hemorrhage, pernicious vomiting, active tuberculosis, decompensating heart, eclampsia, and diabetes. In each of these conditions the surgeon is confronted by the consideration of what is the preferable means to obtain immediate relief from the impending danger; and there is also imposed upon

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him the responsibility of providing such means as will protect the patient against recurrence of the trouble.

It is evident that, though fortune favors recovery from the first trial, the woman's vitality is not only too impaired to meet a second test, but she is more susceptible to the next hazard. Unfortunately, instead of one attack immunizing against recurrence, it is too evident that the influence of the first provides greater susceptibility to the evils of subsequent dangers of the same origin. One having suffered retinal hemorrhage, occasioned by pregnancy, is destined to more severe ocular involvement in a subsequent pregnancy. A decompensating heart, having weathered the storm of the first pregnancy, would be less able to meet the demand of a second gestation. The surgeon, therefore, should endeavor to have the woman protected against the possibility of such recurrences.

Hysterectomy not only promises immediate relief, but it also provides protection against the recurrence of childbearing. Hysterectomy is performed with less risk to the patient than other surgical methods ordinarily employed to terminate pregnancy. The removal of the uterus renders conception impossible. Hysterectomy can be done easily and quickly, with little loss of blood during the operation, and definitely provides against loss of blood thereafter. Hysterectomy is a definite surgical procedure, and secures a more satisfactory result than other operative measures.

Those who are of the conviction that the chorionic villi develop elements which, set free into the circulation, produce toxemia, can appreciate the possibility that the uterine tissue is surcharged with this deleterious element. Merely to remove the product of conception, and permit the uterus to remain under such conditions, is to leave within the body of the patient a quantity of the pernicious element that ought to have been taken away. It is clearly evident that a hysterectomy better favors the recovery of patients suffering from toxemia than any of the other surgical procedures which do not include the removal of a uterus saturated with toxic material. I am convinced that the woman upon whom a Cesarean section is performed to relieve her of eclampsia, will have a better chance for recovery if the uterus be extirpated at the same time.

The function of menstruation involves certain losses to the organism which it is well to conserve. One of these is the monthly loss of blood; it is especially desirable that this blood should be conserved in cases suffering from active tuberculosis. Hysterectomy provides against this periodic loss of blood.

The normal sexual life, which is essential to the happiness of the



married relations, deserves consideration. Hysterectomy, without removal of the ovaries, does not impair the sexual desire, and it does not prevent the continuance of sexual intercourse. The latter may be practised with liberal indulgence, without fear of conception, and without the mental anguish that such apprehension imposes upon the woman.

The query proposed by the subject under discussion should be answered in the affirmative and hold good as a working rule. This is justified, I feel, in that the removal of the uterus definitely removes the possibility of conception; it favors the patient's recovery; it does not interfere with the continuance of sexual life, and it completely disposes of all apprehensions as to the consequences that might arise were a pregnancy still possible. There is little risk to the patient in a hysterectomy done under the circumstances indicated above.

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## A FURTHER STUDY OF THE USE OF CHLOROFORM IN LABOR.\*

BY

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MANY drugs which are used with benefit in certain doses will produce toxic effects in larger doses. We are all aware that strychnine in quantity many times greater than is needed for therapeutic effect will cause death. Witnessing the convulsions and tetany of a dog injected with a large dose of strychnine in a laboratory of pharmacology we, as students, demonstrated the results of poisonous doses. Yet the memory of these symptoms of poisoning has not prevented us from using the drug in medicinal doses for the therapeutic effect. Clinical experience satisfies us with the safety of such administration, and we do not call up as relevant the memory of the symptoms in dogs subjected to overdosage.

A number of laboratory workers have made experiments on animals with chloroform inhalation. Pathological changes in the liver and other organs have been found at autopsy following this administration in excessive quantity, in dosage many times greater in proportion to body weight than is used in the practice of obstetrics. Yet in spite of the clinical experience, based on hundreds of thousands of cases, we find that obstetricians were overawed by the report

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of these experimental results of relatively overwhelming dosage on laboratory animals, and that many of them were ready to abandon the anesthetic on these laboratory findings alone.

In June of last year I reported to the American Medical Association the results of my animal experimentation and clinical experience, as well as an exhaustive study of medical literature, and came to the conclusion that there was no analogy between such experimental work as has been done on animals and the careful administration of therapeutic doses of chloroform in labor. I had been surprised at the tendency of obstetricians to discredit the use of the anesthetic that had been most useful in their practice, not on the evidence of what had occurred in obstetrics, but what had been found at times in deep surgical anesthesia and what was reported from animal experimentation. It would be reactionary and contrary to the purpose of scientific advancement to ignore the evidence of the laboratory. It seemed only practical, however, to study the reasons for the apparent discrepancy between obstetrical experience and laboratory findings and also between the use of this narcotic in labor and in general anesthesia.

About this same time Morley, of Detroit, had independently studied this question from the same viewpoint and had refused to be convinced that what he saw in obstetrics was wrong because of what he heard of animal experimentation. He analyzed the report of one of the experiments of Whipple and Sperry on chloroform poisoning, as follows: "A dog weighing 224 ounces was given 2.25 ounces of chloroform for four hours. The amount of chloroform was  $\frac{1}{100}$  of the body weight. In this same proportion, if an obstetrical patient weighing 150 pounds were given chloroform in the same proportion of her body weight, she would receive  $1\frac{1}{2}$  pounds of chloroform in four hours or in the same period of time. She would no doubt have late chloroform poisoning if she could be made to live that long."

There is nothing wrong with the animal experiments made by the pathologists. It definitely and conclusively shows central necrosis of the liver cells and changes in other organs as a result of chloroform. But it has no bearing on the chloroform analgesia in labor any more than has the poisoning of dogs with strychnine to the medical use of the drug. You cannot imitate the ideal chloroform analgesia of the woman in labor, in animal experiments. I endeavored to do this in a series of experiments on dogs and guinea-pigs. Using quantities of chloroform that were absurdly overwhelming when compared to the quantity used to obtain a delightful analgesia in a woman in

labor, there was no similar state in the animal. The chloroform analgesia of labor is largely a psychic condition. The woman experiences relief from an agonizing pain from a few drops of chloroform. After the first successful application during a pain, with each succeeding pain she has the physical effect of the chloroform plus the suggestion of relief derived from the first experience. For this reason, I always give enough chloroform during the first few pains to actually dull the pain and subsequently use less, depending in part on the suggestive effect. In this way a condition of comfort and quietude is obtained on astonishingly small doses of chloroform.

Take a guinea-pig, not strapped down, but resting comfortably and every few minutes for four hours let it smell  $\frac{1}{20}$  of a drop of chloroform; it will not have any analgesia, and its psychic state will probably be only one of mild wonder at your performance. But the amount of chloroform is comparable to that used for a woman in obstetrical analgesia and the guinea-pig's liver would remain quite normal. Our animal experimenters do not use such dosage in producing artificial liver necrosis. They say "just enough chloroform to produce narcosis." In my own experiments the least quantity with which I could obtain any semblance of narcosis was 112 drops during four hours for a half-pound guinea-pig, the equivalent of 30,000 drops for an average-sized woman; that is  $3\frac{3}{4}$  pints. It is sixty times as much as I have used to procure a perfect analgesia during the painful three and one-half hours of labor in a neurotic primipara, including a short period of complete anesthesia during the expulsion.

One of the exponents of another anesthesia in referring to my comments on the experiments on animals inferred that I claimed that the element of shock to these struggling and frightened animals played a part in the destructive changes. He argued that the same state of shock and fear existed in animals subjected to other anesthetics which did not show internal changes to the same extent.

I do not contend that shock is a potent factor. I described the struggling of the terrified animals to show how unlike the quieting effect of analgesic doses of chloroform to a parturient are the effects produced on animals to whom the narcosis is administered in experiments.

You do not produce a benign happy semisomnolence in the laboratory animal. You irritate and excite it until you stupefy it with the narcosis, and, therefore, you never produce experimentally the conditions existing in the woman in labor. She is

relieved from the anguish of labor pains and made quiet because the cause of her restlessness is removed. The animal is made restless and resistant and to narcotize it you must use quantities of the anesthetic so out of proportion to what is used in labor that there is no reason to consider the one as having any relation to the other.

Very evidently then, if we are to abandon chloroform in midwifery, it must not be on the evidence of its effect on animals given in a way that has no resemblance to its use in midwifery.

But the objection to chloroform in obstetrics is based on other grounds also. There are also clinical reports of late poisoning from chloroform. Almost exclusively, however, these cases are taken from general surgery. For over fifty years this question of remote toxic effects has been before the profession, and in all that time hardly a case is reported in obstetrics in spite of the millions of times it has been used and the thousands of times it has been misused.

A few cases have been noted where there were complications in kidney or liver disease or preexisting sepsis.

It must be kept in mind that in the course of an obstetrical case, complications may arise which demand a prolonged deep surgical anesthesia. The situation is then one of surgical anesthesia, and the choice of anesthetic must be made on the same principles that guide one in any surgical operation. For surgical narcosis, at least in America, we are agreed that chloroform is not the safest nor most desirable except in certain cases. For obstetrical surgery, just as for any other operative work, we would usually prefer ether. This has nothing to do with the obstetrical analgesia of which I am speaking and for which I consider chloroform most useful.

The idea which we are seeking is freedom from suffering without endangering the patient or interfering with the progress of labor. Armed with chloroform and with intelligence in its use, the accoucheur can reach this ideal. Its use is selective as to the time we begin in each case and to what extent we continue its administration.

Twilight sleep was objectionable because once a patient was elected for it, she was put through it, though the same patient might otherwise have gone through a relatively pain-free labor in which little or no anesthetic would have been needed.

The object of obstetrical analgesia is to make labor tolerable. But our object is not alone the desire to prevent suffering. Pain beyond the psychic endurance of the patient at any stage, inhibits



labor. Analgesia which dulls the pain to a degree that can be endured by the patient prevents this inhibition and aids the progress of labor. So, according to the sensibility of the patient and her stability of psychic balance, chloroform is begun in the first stage, early in the second or just before or during expulsion. At any of these periods either because of the patient's hyperesthesia and instability of psychic equilibrium, or because of obstetrical conditions creating unusual suffering, the contractions are inhibited and labor progresses more readily as soon as the agony is dulled and the psychic balance restored.

When a patient has been having a few drops with each pain the state of analgesia can be merged into anesthesia very readily with a small quantity of chloroform. This is a perfectly safe and wise procedure for managing the head on the perineum. It may also be employed for a few minutes where the forceps are used. When, however, a condition exists requiring any obstetrical operation in which a state of complete anesthesia is needed for a considerable period of time, the question of chloroform or ether stands as the question stands in general surgery. Ether is chosen except where there are contraindications.

For the analgesia of labor chloroform correctly used is perfect in results and absolutely safe. Other men have found great satisfaction in the use of nitrous-oxid-oxygen, and it seems that as they become skilled in its use, they obtain a satisfactory analgesia just as we do with chloroform.

It cannot be safer, however, and its exponents must not seek to establish it on the basis of experimental poisoning of animals with chloroform, nor on the use of chloroform in surgery for complete anesthesia, for neither has any bearing on the harmless chloroform analgesia of obstetrics.

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## RETAINED SECUNDINES; A STUDY OF ETIOLOGICAL FACTORS.\*

BY

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THE prevalence of abortion is shown by Doleris who, in a series of 103,800 obstetrical cases, found 8549 abortions or 8.2 per cent. Many English and American observers estimate the proportion as

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10 per cent. of all confinement cases. The following table is based upon the figures given by several observers: Brion, Commandeur, Doleris, Dorland, Ebeler, Lackner, McPherson, Sandberg, and Titus. It illustrates the tremendous importance of abortion and its consequences.

Incomplete abortions.....	72 per cent.
Infection {	1. In incomplete abortion..... 45 per cent.
	2. In criminal abortion..... 78 per cent.
	1. Criminally produced..... 50 to 65 per cent.
	2. Previously aborted. Out of 3609 cases..... 23.2 per cent.
Main causes {	3. Syphilis { directly (one series)..... 4 per cent.
	indirectly (many authors)..... Large per cent.
	4. Endometritis (one series)..... 10 per cent.

#### MORTALITY IN REPORTED CASES 9.75 TIMES GREATER THAN IN CONFINEMENT.

Abortions			Confinements		
Cases	Deaths	Per cent.	Cases	Deaths	Per cent.
2569	101	3.9	4690	22	0.4

The materials for this study were obtained from a review of the literature listed in the entire series of the *Index Medicus* from 1878 to 1917, including the available theses, books or other contributions referred to in accompanying bibliographies.

The literature reviewed was confined almost exclusively to the English, French and German languages.

In addition to the above, a careful pathological study was made of seventy sections obtained from 474 routine gynecological cases, which represent a classified part of the total material examined by the Department of Pathology in the University of Michigan.

The specific references in the literature concerning the causes of incomplete abortion are notably few in number and brief in discussion thereof.

The literature was consulted under the following subject headings: Obstetrics (General), with subheadings, "Pregnancy and Complications," "Diseases of Placenta," and "Abortion;" under Medical Jurisprudence, the subheading, "Criminal Abortion," contains some of the references cited. Available articles, as listed under the above headings, and bearing upon the etiology of retained secundines or the etiology of abortion, were also consulted.

A statistical study of incomplete abortion would be most defi-

nately illuminating, but unfortunately this is impossible if we are to use data which is at all accurately compiled. The reasons herewith being inherent with the practice of abortion which is presumably criminal in 50 per cent. of instances. Boissard thinks more than two-thirds are provoked or criminal, and if both direct and indirect causes are analyzed the remaining 50 per cent. of all cases will be shown to have largely resulted from pathological changes incident to previous abortions, miscarriages, syphilis, and other infections. A definite reticence obtains in the recital of history pertaining to criminal induction of abortion, syphilis, or even to abortions occurring under the most respectable conditions.

To the foregoing may be added a large number of undiagnosed cases, which must necessarily pass unrecorded. A large number of cases of retarded menstruation followed by profuse hemorrhage are undoubtedly instances of early abortion. It is the incomplete types which present most commonly for diagnosis and treatment.

In evidence concerning the number of undiagnosed cases, it is pointed out that 17.29 per cent. of 474 consecutive gynecological cases during the period July 1916, to July 1917, were almost wholly unsuspected of having had abortions, yet unresolved decidua, chorion or other evidence of recent abortion gave proof of a surprising percentage of recent abortions.

The statistics available may have considerable value at several points only in establishing certain interesting relations of etiologic factors.

A full appreciation of the causative factors for incomplete abortions involves a close study of the physiological and microscopical tissue changes during early pregnancy. The main mechanical factors to be considered are: Impossible separation of the embryonal and maternal parts at the time of maximal expulsive effort. There may be inadequate expulsive force even after separation is complete, the entire product of conception remaining at and within the internal os (so-called missed abortion of Vermehren, if retained ten weeks and not more than thirty-one weeks).

Inherent degenerative changes may occur either in the embryo or maternal parts, and may have advanced sufficiently to bring about a separation of a portion of the fetal mass with resulting expulsion of that part as a foreign body.

The embryo in the third month is less than one-third as large or heavy as the placenta, weighing 11 grams as compared with a placental weight of 38 grams. The uterine contractile force is

at this time frequently inadequate to separate more than the egg by what may be termed the first-stage expulsive efforts.

The contractions of the uterine musculature may be sufficient to separate the fetus, but not the membranes from the uterine wall, and yet not sufficient to overcome the cervical rigidity.

Malpositions, particularly retroposition, may frequently contribute to the mechanical difficulties of complete expulsion. Titus found in a series of 274 abortions 41.09 per cent. with malpositions or adhesions, 30.13 per cent. being retropositions. Sandberg, quoting Martin, May, and Howitz, lists 243 cases of retrodisplacement, of which 30 per cent. ended in abortion, while in 101 cases of prolapse of the uterus, 18 ended in abortion.

It is exceedingly difficult to specifically consider the physiological, anatomical, and pathological causes of incomplete abortion. The foregoing mechanical factors are frequently inseparable from one or all of the other causes.

It is evident that each and every cause of abortion may, under certain conditions, become directly causative of the incomplete form.

There can be no question that criminal instrumentation and other provocative means, with their sequences of infection, contribute directly and remotely in causing the great majority of incomplete abortions. Titus found 82 per cent. of a series of criminal abortions at Johns Hopkins were incomplete, and 78.05 per cent. of this same series were infected, streptococcic infections occurring in 34.37 per cent. of these cases.

The decidua reflexa may be punctured from without, as in the provocative type, or become ruptured from within by pressure of the contracting uterine muscle. A partial separation of the decidua may be produced, and resulting hemorrhage will occur at the upper or lower pole of the placenta, or a hemorrhage may rupture through into the chorion and amnion. Death of the ovum easily results, and the consequence is premature expulsion of the ovum with retention of secundines.

The French viewpoint is expressed by Bonnaire, who says: Abortions occur *en bloc* during the first few weeks of pregnancy, while from this time forward they occur more often in 2 parts until at the fifth month abortion *en bloc* is almost unknown. Criminal abortion, occurring so often in this period and almost always in two parts, is due, at least in part, to a lack of the sense of maternity which the fetus later arouses in the woman. When in the third or fourth month there has been a preliminary opening of the ovum and the secundines are retained, Bonnaire believes rather than sus-



pects that there has been a culpable intervention. Any factors which act to delay the normal preparation by hypertrophy and hyperplasia of the muscle elements may cause retention of the secundines. The unyielding cervix, whether from nondevelopmental or pathological changes, is also a causal factor in the retention of the products of conception.

It should be observed that hemorrhage in the upper portion of the decidua is more fatal to the ovum than one occurring near the internal os. When the placenta separates, the vessels of the decidua serotina are torn through, and the uterus is unable to contract, making what the Germans call external, mixed or concealed hemorrhage. When completely retained, it is a concealed hemorrhage.

In 1809, John Burns, Lecturer on Midwifery in Glasgow, published an interesting small book entitled, "Observations on Abortion." The following pertinent verbatim quotations are here given: "If the uterus had been filled up, as in the beginning of the third month, the vesicle never escapes first; but we have for some time a discharge of blood, accompanied or succeeded by uterine pain. Then the inferior part or short stalk of the ovum is expelled, gorged with blood and afterward the upper part equally injured. Sometimes the whole comes away at once and entire; but this is rare. As considerable contraction is now required in the uterus, the pains are pretty severe. Often the membranes give way, and the fetus escapes with the liquor amnii, while the rest of the ovum is retained for some hours or even days (in all cases the placenta is retained much longer after the expulsion of the child in abortion, than in labor at the full time), when it is expelled with coagulated blood separating and confounding its different parts or layers. At other times the fetal and maternal portions separate, and the first is expelled before the second, forming a very beautiful preparation. In some rare instances we find the whole ovum expelled entire, and in high preservation. After the expulsion, the hemorrhage goes off, and is succeeded by a discharge somewhat resembling the lochia. When the liquor amnii really is evacuated, sometimes a spasmodic contraction of the fibers near the cervix takes place, instead of that regular action which is necessary for expulsion; and if the whole of the liquor have not escaped, the remaining portion will be confined by the tightening of that part of the uterus round the fetus; and this contraction may endure for a very considerable time. If not interrupted it may lay the foundation of future diseases in the uterus. Abortion requires for its completion a continued flow of blood."

The embryo not infrequently exhibits a necrobiosis as the result

of malnutrition. Deformation of the embryo, according to Lindsay, is mainly the result of aberrant living processes which were preceded by disease.

Mall speaks of fetal monstrosities as abnormal or pathological, those of the first group being germinal, and those of the second group acquired from external influences. Fetal monsters are said to form 2.6 per cent. of all pregnancies, and three well-formed monsters are aborted in early pregnancy for every one which goes to the end of pregnancy. The most common external cause of pathological monsters is decidual endometritis.

In an interesting study of five or six dwarf embryos Lindsay found only one with traces of a blood vascular system in the embryo and investing membranes, and in that case the existing vessels were partially obliterated.

In the period before blood-vessel formation, when nutrition is obtained by imbibition, there are marked deviations which must be explained as arising from defective lymph.

The preplacental period ends toward the close of the third week of gestation, when the vascular allantois has appeared and its vessels have penetrated all the chorionic villi, and by imbibition all the villi aid in nourishing the ovum. Toward the sixth week of pregnancy differentiation of the true placenta begins and simultaneously the chorionic villi of this area become more and more enlarged, while the nonplacental villi gradually atrophy, so that the chorion, instead of having its entire surface covered with villi, comes to have, by the fourth month, persisting villi only on the placental area. This atrophic change may not cease, but proceed through the placental area with resulting death of the fetus. The chorion may be at this period subjected to cystic degenerative changes.

There is no sharp demarcation line between maternal and fetal structures, but their meeting zone is indicated by the hemorrhagic condition of the tissues, areas of necroses and a narrow band of fibrin (Nitabusch's fibrin band) which is not everywhere complete.

The trophoblastic cells meeting this zone obtain the embryonal nutrition by imbibition; the extravascular blood and the lymph of the zone being the available pabulum (embryotrophe of Bonnet).

The intimate union, apposition or fusion of the mucous membrane of the uterus with the outer layer of the ovum must provide for not only nutrition, but respiration and elimination. Since the union is either an apposition or a fusion, the expulsion of the decidual membrane may be complete or incomplete.

The human placenta is a placenta vera representing the highest

development of its type; a development which the placenta of the anthropoid ape has not quite reached. In the phylogenetic and ontogenetic development of placenta types nutritional function is accomplished in the lowest types by the maternal blood passing in succession through maternal endothelium, connective tissue, uterine epithelium, portions of the uterine cavity, the chorionic epithelium, chorionic connective tissue, and the endothelium of the chorionic vessels. In the human, during the earliest stage of the embryo, all the maternal walls are present, but they disappear one after the other as the embryo, by means of its chorionic epithelium, penetrates farther and farther toward the maternal blood. This penetrative process may be arrested entirely or in part by different causative factors of abortion, thereby making impossible or imperfect the highest possible stage of placentation (placenta hæmochorialis), with maternal partitions all gone, and the maternal blood directly bathing the chorionic epithelium.

The two ways of food purveyal to the embryo are sometimes described as embryotrophic and hemotrophic, the first being a transfer process, and the second a direct absorption process. The products in either case are probably subjected to a digestive process before being used by the embryo. These maternal substances are partly products of secretion, partly waste products, together with extravasated maternal blood. The interdependence of the finished food product upon the maternal and embryonal organisms appears to have been very well established. Hofbauer has pointed to the similarity between intestinal and chorionic villi.

One can appreciate the difficulties which may so easily beset the all-important metabolic functions of the developing embryo in its early existence by comparing them with the metabolic exigencies which come from improper food and diseased intestinal epithelium. In the so-called neofetal period which lasts about two weeks, during which the placenta is being completed and its circulation developed and adapted to the fetal needs is a time when pathological circulatory changes due to failure of adaptation of either or both fetal and maternal structures to the newly formed placental circulation are likely to occur. It has been shown that external influences may cause a faulty implantation of the ovum so as to interfere with nutrition sufficiently to produce monsters. Mall concludes that under the foregoing conditions every ovum has the power to become a monster.

The more recent work upon metabolism of fetal life has led to a change of view regarding the physiological and histological changes



incident to embryonic life. Murlin picturesquely asserts that the only reason why a fertilized ovum rather than an unfertilized one becomes attached to the uterine wall is that its cells are hungry and they possess the means of satisfying their hunger. It may be said the ovum never is a true body cell but is, to a large degree, an independent organism. Hatschek aptly says, "all the cells of the body stand at the service of the germ cells because in them is perpetuated their own being."

It is highly probable that a multiple enzymic production obtains in the earliest stages of the human embryo. Von Spee says of the trophodermic cells—whatever they touch undergoes solution, and Murlin continues the thought in saying—wherever the ovum happens to come in contact with the uterine mucosa after the fringe of follicle has been digested and absorbed, it there adheres and soon dissolves a depression; the depression becomes a cavity. Young has observed that often the tissue removed is greater in bulk than the chorionic mass, and the cavity extends as the trophodermic cells increase in number.

The placenta is now generally believed to represent upon the part of the maternal organism a formation for restriction of the action from the enzymes produced by the embryo. Murlin speaking from the standpoint of the general physiologist says: "the nutritive relations of mother and fetus find their explanation in the specificity of the proteins and the specificity of enzymes which lie at the basis of heredity—the reproduction of kind."

It is quite safe to conclude that the katabolic processes predominate over the anabolic during the first four months of pregnancy or until the time when the placenta is completed in all essential structures. It has been suggested that the katabolic activity of this period is comparable to that of cancer and is due to the more or less unrestricted proteolytic action of the trophoderm. The first few months have been well described as a contest between the new organism and the old. The chemical substances produced by the chorionic cells probably cause hyperemesis, eclampsia, etc.

In an excellent monograph published six years ago, Young, of Edinburgh, recites his observations in a study of seventy-five cases from which he made sections of the uterine mucosa. He has therefrom been able to point out some new interpretations of the uterine changes incident to pregnancy, menstruation and chorioepithelioma. He says, "the uterine mucosal stroma is composed throughout of an undifferentiated mass of soft, easily displaced protoplasm, which is especially adapted to react to certain chemical substances by



actively imbibing the blood fluid. This is dependent on a change in the colloids that enhances their affinity for fluid. This passes into the protoplasm and expands the intercellular spaces. In addition the protoplasm is broken up into minute fluid-containing cavities surrounded by the displaced cell substance. These increase in size partly by expansion, which is followed by a giving way of the tissue partitions and adjacent spaces, and partly probably by an actual solution of tissue. These changes are well-marked in menstruation and pregnancy and determine, among other changes, the formation of the large edematous and blood areas and the expanded sinuses, which develop in these conditions, and similar changes are seen in the pregnant tube and in the chorioepitheliomatous uterus."

The stroma of the uterine mucosa is so constructed as to permit of a fluid accumulation at every part. The softening of the cervix and vagina is from this fluid which has been sucked into the tissues in consequence of an alteration in the colloids which increase their affinity for fluid. In case of retained secundines, the vascular changes are induced by the chorionic cell substance, which causes the vessel walls to open up and allow the escape of blood. The edemic stromal and vascular changes are observed at considerable distances from the chorionic cells, however, the maximum effect is found nearest these cells, and particularly along the track of the veins. The bleeding is often derived from the mucosa at a distance from the villous remains, as well as from vessels in immediate proximity. To study the hemorrhages of the uterine wall during the pregnant state, one should observe that the mucosal stroma is like the mesodermic tissue of the developing embryo.

The plan of distribution of arterial blood-vessels, which are continuations of the ovarian and uterine arteries, to the uterine mucosal wall, is by a winding course from the muscle wall to the surface. Arterial twigs are often seen surrounding the glands. In many places small branches of arteries lie immediately in contact with the epithelial cells of the glands, and when the vessels are distended this appearance is brought out more clearly and under these circumstances seems to be more numerous in the neighborhood of the glands than in the surrounding stroma. When in pregnancy the mucosa is thickened, the vessels are drawn out perfectly straight.

Young points out that the blood-vessels lack differentiation, for they consist in their entirety of ordinary stroma cells which, if altered at all, are simply altered as tracks or channels through the soft stroma protoplasm, by means of which a rich supply of blood

is carried to every part of the mucous membrane. The uterine vessel walls, almost immediately after reaching the mucosa, throw off their specialized supporting coat of muscle and elastic tissue, and during menstruation, pregnancy or chorioepithelioma, it is impossible to tell which are the original intimal cells and which the stroma cells.

During pregnancy there is an immediate and easy gaping of the vessels in the proximity of the embryo for the purposeful "give and take" of essential products. *The perfection of this mechanism and its normal operation is the crux of the entire question of abortion and whether it is complete or incomplete depends upon the nature of the intercepting pathological factors.*

The nature of the subject under discussion admits of intensive study in tissue changes and the resulting functional disturbances therefrom. It involves further an accurate statistical compilation of the relative frequency of the several factors which have produced incomplete abortion; and the difficulties attending the compilation are as previously mentioned difficult and nearly impossible. After one has passed in review the majority of these cases which belong to the so-called provocative or criminal class, there remain the classes which invite close study in the anatomical, physiological, and pathological changes incurred before determination can be made of the causative factors.

It is to be remembered that the several factors and conditions may act separately or conjointly, as in one criminal abortion becoming the primary cause of an endometritis which in turn provokes a prolonged two-stage abortion occurring one or more times. Also, it must be mentioned that the consideration of a cause such as syphilis, which doubtless acts very remotely at times, as in the formation of the embryo or chorion or in producing increased connective tissue changes in the uterine arterial walls, requires a most extended research.

Statistics relative to the frequency of syphilis must vary widely according to the methods of study used for its diagnosis. For example, Lackner gives 4 per cent. of syphilis as the cause of retained secundines in a series of 100 consecutive cases, and his diagnoses were based only upon positive Wassermann tests. The same author quotes Reischig as having but 0.78 per cent. of abortions in 500 luetic women, and Frinches as saying lues plays practically no rôle in abortions during the first four months of pregnancy, but rises to 20 per cent. in the seventh month. A. S. Warthin, of whose work Sir Wm. Osler speaks as being most painstaking and thorough,

believes that fully 50 per cent. of abortions are from luetic causes, and asserts that the Levaditi stain to successfully exhibit the spirochete pallida must be used upon material within a very few hours after death.

It must be said in this connection that many of the causes cited elsewhere in this paper, as producing incomplete abortion, present just as true histological pictures of syphilitic changes as can prevail during the earlier months of pregnancy. Citation of the well studied case of Watson, Wade, and Waterston which, though one of a decidual cast, might easily have been incomplete instead of complete, as indicated in the following description, viz: Patient presents a history of two full time children, followed by seven abortions at from a few weeks up to four and one-half months; hemorrhage was unusual, floodings occurred from third month onward. Histologically the conception product was separated through the spongy layer of the decidua; interglandular bridges at certain areas were torn through and consisted of necrotic tissue, the blood-vessels supplying these necrotic bridges showed marked pathological changes. In some vessels there was actual thrombosis, in others narrowing of the lumen by active proliferation of the endothelial lining and fibrous tissue cells surrounding the walls. Around these vessels and in the areas supplied by them, there is an excess of extravasated blood. The above described tissue changes are so exactly like those of syphilis that one does not hesitate to describe this case in this connection.

Of the definitely demonstrable causes which are responsible for numerous instances of retained secundines, mention has heretofore been made of malpositions of the uterus and inadequate placental sites. These causes must be applied in explanation of many varied circulatory changes which in turn produce local or partial tissue insufficiency, resulting in sectional dissection first, then hemorrhage, and finally death of the fetus, with ultimate delivery in two periods.

It is scarcely necessary to summarize what has been said directly and indirectly concerning the various infections, except to point out that the general pathological features are in many particulars the same whether the infection is bacillus abortus (Bang), Neisser, staphylococcus, streptococcus, or other type. The changes effected are seen in the cotyledons, uterine wall, placenta or in all these tissues. The clinical picture showing an endometritis, metritis, etc. The hypertrophy and hyperplasia resulting may serve as an immediate or remote basis for partial or complete loss of the conception products.

In conclusion, attention is again called to the part of this paper in which attention was given to the histology of the maternal and fetal tissues and their related physiology. It is to be specifically emphasized that the principles involved from whatever cause, may be essentially the same in producing the factors which determine improper enzymic production, and interaction, or produce abnormal metabolic changes which in turn lead to death of the fetus and partial expulsion of the secundines.

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## NOTES ON METHODS FOR OVERCOMING MECHANICAL OBSTRUCTIONS TO PREGNANCY.\*

BY

ROBERT T. MORRIS, M. D., F. A. C. S.,

New York City.

(With nine illustrations.)

ONE who goes about to various clinics will observe that surgeons are sometimes very wasteful of pelvic structures in their conscientious desire to remove all sources of discomfort for the patient. You know the old quotation, "More harm is wrought by lack of

\* Read at the Thirtieth Annual Meeting of the American Association of Obstetricians and Gynecologists, Newark, N. J., September 17-19, 1917.

thought than any bad intention." When your Secretary asked me for a paper for this meeting, I had just received notice of pregnancy in a case in which very large interests were involved, and I had made the pregnancy possible by a resource which is not ordinarily employed in all hospitals. The patient had lost one ovary from cystic degeneration and a part of the other ovary had been removed. The Fallopian tubes presented that form of arrested development which we commonly find in fibronodosum. In this particular case there were only one or two tiny fibrous nodules, but the lumina of the oviducts appeared to be closed for the most part. In a case of this sort my resource has consisted in passing a probe to one cornu of the uterus, then through an abdominal incision exposing the oviduct lumen at a point as near as possible to the uterine lumen. A slit is next made in the ampulla of the fimbriated end of the oviduct

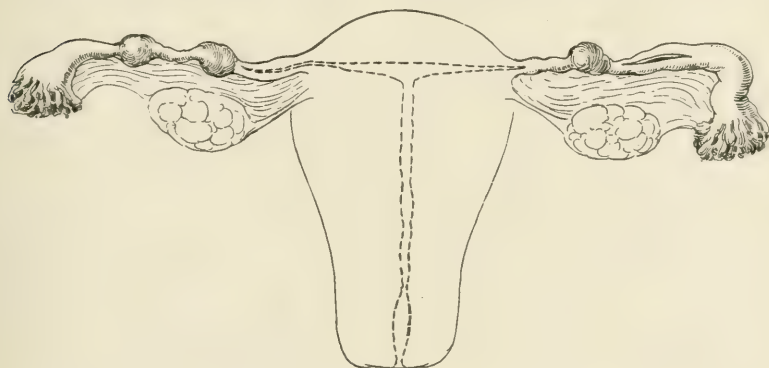


FIG. 1.

and the distal end of the oviduct is finally sutured to the vicinity of the opening near the cornu in such a way as to make a short-circuit past that part of the oviduct which is the seat of degenerative changes. Figs. 1 and 2 illustrate the operation.

*Clubbed Oviducts.*—As a result of various inflammatory processes we frequently find oviducts surrounded by adhesions, clubbed at the distal end, closed and without fimbriæ inside. Judging from my observation such tubes are commonly held to be worthless and they are removed. Two resources are available if the inflammatory processes have come to a pause. Fig. 3 illustrates one of these resources. The clubbed end of the tube is split open and dusted freely with aristol. Aristol presents a mechanical obstacle to closure of the incision. This is so benign, if free from grit, that the peritoneum makes no serious effort at walling it in with plastic exudate, but

it will remain in place for many months. During that time, no doubt aristol in itself presents an obstacle to the passage of ova. Eventually it is taken into solution by the fat of normal tissue cells in the course of normal physiologic retrograde metamorphosis. One

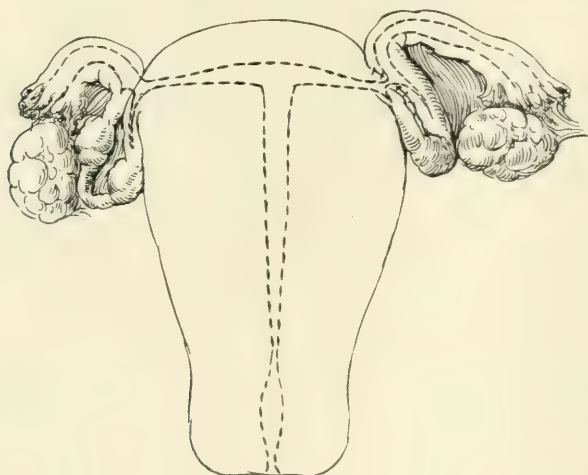


FIG. 2.

must determine if the clubbed tube is patent clear to the lumen of the uterus, and when it is not patent the resource pictured in Figs. 1 and 2 may be employed in addition. In one case in which I had

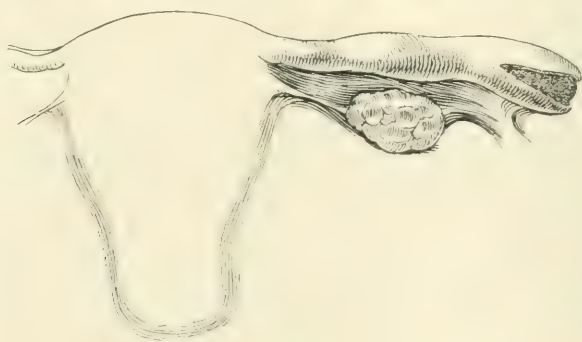


FIG. 3.

occasion to reopen the abdomen for further relief of adhesions some months after the first operation, the clubbed oviduct still carrying some aristol had developed or at least released a number of short but distinct fimbriæ. I do not know how often such a reparative process might be anticipated. Much would depend upon the degree

of damage from interstitial infiltrates at the time of the original acute inflammatory process.

*"Scrap" Uterus.*—In certain cases of myoma or of fibromyoma in which pregnancy is very much desired, we may sometimes construct a uterus from scraps of tissue which remain intact. Figs. 4, 5 and 6 illustrate this. In such a case the original tendency to degenerative change remains, and we must inform the patient that a recurrence of the neoplasm is to be anticipated. The patient must

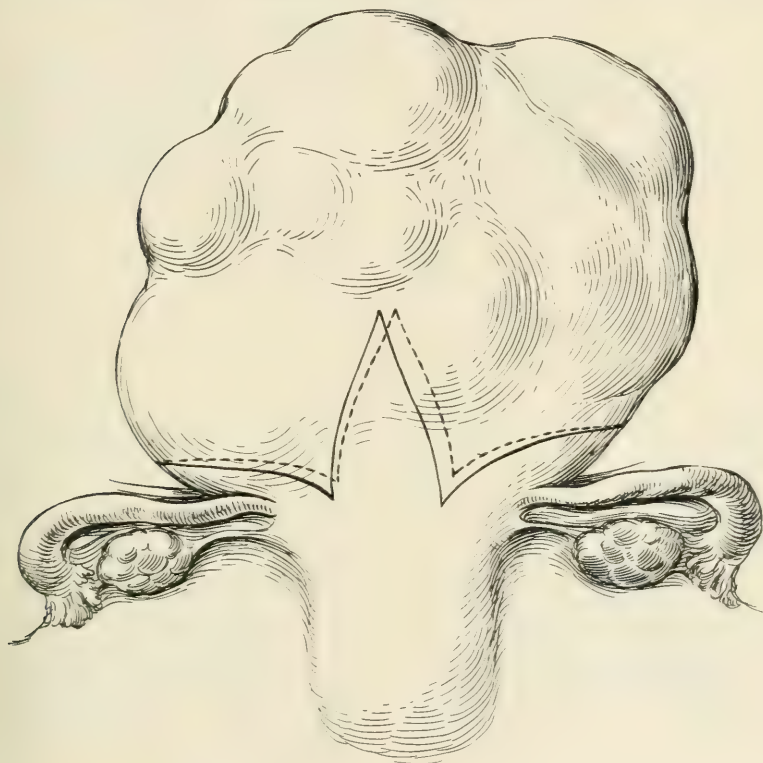


FIG. 4.

be prepared for another operation at some later date, and the operation is advised only in a case in which the securing of a child in the interval is of paramount importance. I have recently seen one patient for whom a scrap uterus was constructed more than three years ago and it is practically impossible to determine that the patient does not possess a normal uterus, although the fibromyoma in this case had reached halfway to the navel. As opposed to such a favorable outcome, I have recently removed a 'scrap' uterus which



had undergone further myomatous degeneration to the point of making pressure complications. We may simply keep in mind the idea of employing the resource sometimes.

*Artificial Fallopian Tubes.*—Mrs. S. K., forty-two years of age, entered the Post-Graduate Hospital in October, 1916, willing to take

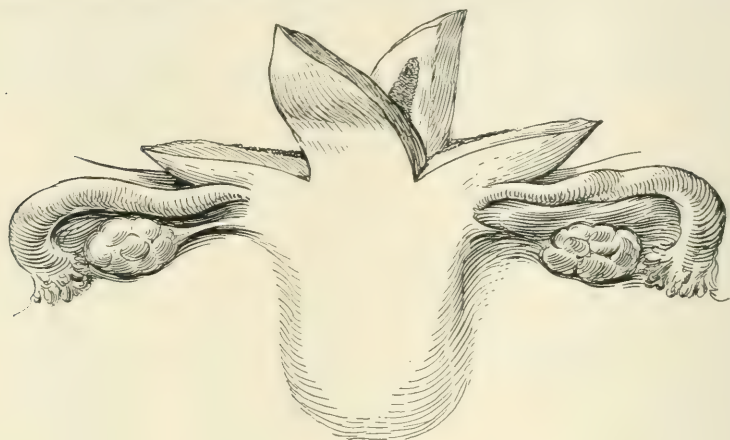


FIG. 5.

desperate chances for securing pregnancy. Her oviducts and one ovary had been removed previously by Dr. Boldt, who had adopted at that time a conservative though rather hopeless procedure of leaving

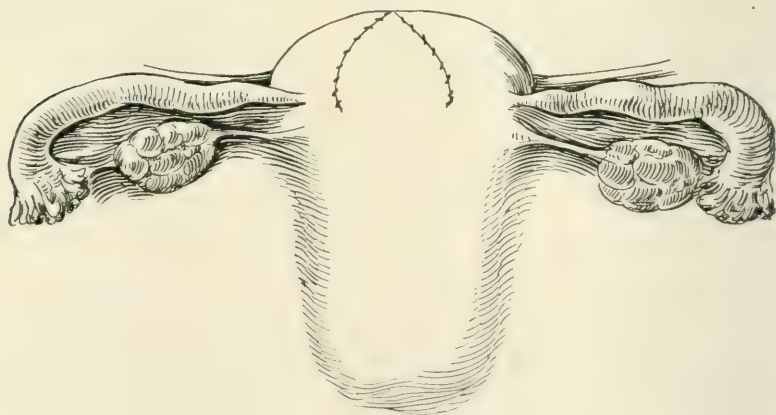


FIG. 6.

one ovary sutured to the fundus of the uterus near the stump of one oviduct. When an oviduct is removed the lumen of the stump is almost invariably closed by plastic exudate. In experimental work

we find it practically impossible to keep such a lumen open, although a number of cases are on record in which that has occurred and pregnancy has resulted. In experimental work with animals and with human subjects I have made heteroplastic transplantation of the distal end of oviducts, but the tendency in heteroplastic transplantation is always toward absorption of the graft. In order to overcome Nature's effort at sealing in the stump of the oviduct with plastic exudate and of absorbing the transplanted part of the oviduct, I employed in this particular case a resource which would be desirable only under circumstances in which the patient understood fully that the work was experimental and not likely to succeed. In the case of Mrs. K. the degenerated ovary which had been conserved had undergone complete degeneration so far as I could determine at the time of operation. A heteroplastic graft consisting of about one-third of an ovary from another patient was introduced and sutured to the uterus (when making ovarian transplantation I first subject the patient furnishing the ovary to tests for syphilis and tuberculosis). A month later the abdomen was reopened in order to determine if the ovarian graft was undergoing the ordinary absorptive processes or if it showed a tendency to resist absorption. The graft appeared to be in such good condition that the step for constructing an artificial oviduct was taken. Figs. 7, 8, and 9 will illustrate these steps.

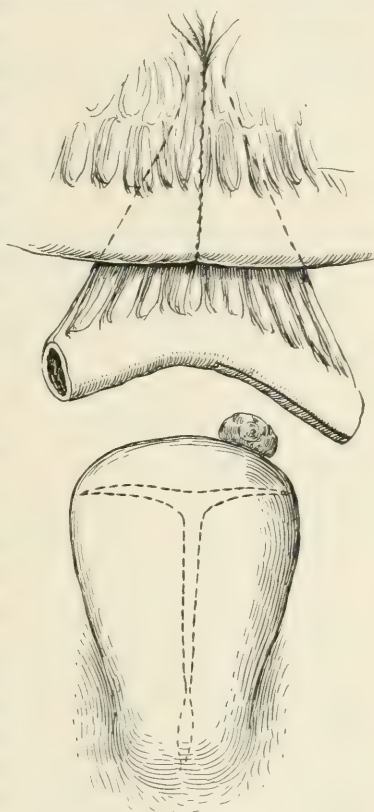


FIG. 7.

A 3-inch loop of ileum with mesentery attached was separated from the rest of the ileum, flushed out with formalin solution and then sutured in such a way that the ovarian graft was included in the lumen of one end of the ileal graft, while the other end of the ileal graft was led into an incision in the fundus of the uterus and

sutured in such a way that the mucus secretion would continue to flow by way of the lumen of the uterus. An end-to-end anastomosis was made between the severed parts of the ileum from which the graft had been taken. I do not know that spermatozoa will be able to make their way against the flow of mucus through the uterus (considerable in degree), but we know what ambitious spermatozoa will sometimes do. Furthermore there might be danger of impregnation of an ovum before it reached the uterine lumen, and we can-

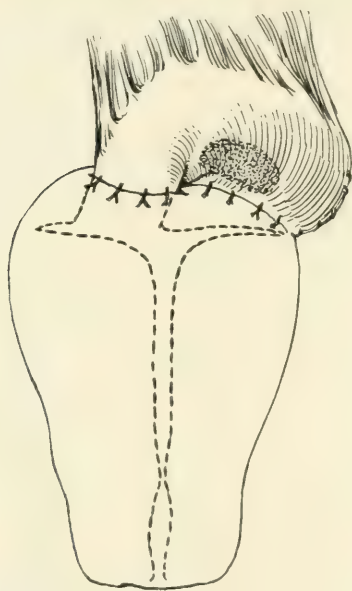


FIG. 8.

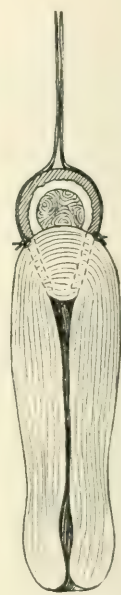


FIG. 9.

not anticipate the degree to which such a graft wall would become enlarged in order to accommodate itself to an extrauterine pregnancy.

In one case I utilized the appendix vermiformis for the purpose of securing an artificial oviduct with mucus secretion. In that case the proximal end of the appendix was sutured to one cornu of the uterus—its lumen continuous with the uterine lumen. The distal end of the appendix was split open and filled with aristol for the purpose of preventing reparative closure.

## VERSION, WITH A REPORT OF TWO HUNDRED ADDITIONAL CASES SINCE SEPTEMBER, 1916.\*

BY

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IN 1914 I became a member of this Association when it held its annual meeting in Buffalo. At the meeting in Pittsburgh, it seemed to me that there was a lack of papers upon obstetric subjects, and a great surplus of papers on surgery, for a society known principally as an obstetrical and gynecological association. When the Secretary sent out his requests for contributions to the Indianapolis meeting, the idea occurred to me that a paper on "Version" would not be out of place. Accordingly, I gave him the title of my paper, "Version, with a report of 500 cases." What happened to that paper many of those present here to-day know, and, doubtless, all have heard something of it. After a lively discussion by the members present, the Executive Committee decided to withhold its publication. The paper was returned to me with the statement, "that in due course of time I should see the error of my ways, and should be sorry ever to have written such a paper; and furthermore, that I should be exceedingly grateful to the men who had discussed the paper adversely."

To those who discussed the paper, I am grateful; but to the Executive Committee who suppressed its publication, I cannot help confessing to a sense of disappointment and disagreeable surprise.

A paper is always of value when it brings out the individuality of the writer's method of practice. My contribution was a plain report of cases of version performed by me and the results obtained with it for both mother and child. The mere fact that gentlemen were present who do not endorse my practice of version, does not make my procedure reprehensible, nor should it have been sufficient cause to bar the publication of that paper.

I did not come before the Association with text-book methods of practice, nor the methods of procedure advocated by many professors of obstetrics; I simply reported my own work, performed in the manner I deemed best because of my experience with over 6000

\* Read at the Thirtieth Annual Meeting of the American Association of Obstetricians and Gynecologists, Newark, N. J., September 17-19, 1917.



personally conducted confinements; and, since the presentation of my paper, instead of resorting to version less frequently, I have felt justified in expanding its sphere of usefulness. Every intelligent man finds his best teacher in his own experience.

In the discussion of my paper of last year, it was claimed that the introduction of the hand into the uterine cavity was fraught with danger, and that it was impossible to deliver, by version, a great number of women without serious injuries to the pelvic soft parts; that the child's life was endangered when the aftercoming head could not be delivered quickly, and that the child could not be brought down by two feet as well as by one foot. These were considered the great objections in the decision against version.

I am willing to admit that, under certain circumstances, it would be dangerous to introduce the hand into the uterus, that sometimes it is impossible to deliver without tearing the pelvic soft parts, and that the aftercoming head, occasionally, causes difficulty in its delivery. But granting all of these objections, I still maintain that a properly performed version, in the hands of a competent obstetrician, is to be preferred to a difficult forceps operation. Version lessens shock by shortening the labor, it conserves the patient's strength, and does away with the injuries to the baby's head. We cannot disregard the fact that prolonged application of the forceps is followed by injurious results which are immediate, to the mother and remote to the child. Epilepsy and idiocy, etc., in the infant may be attributed to a difficult forceps delivery.

It is also claimed that chloroform anesthesia is dangerous to women in labor. Ninety per cent. of my labor cases have been chloroformed to the surgical degree without any accident or apparent danger either to mother or to child.

Some of the salient points in my paper of last year were overlooked in the discussion that followed its presentation. Permit me to call your attention to their importance once more. In the first place, the cervix must be completely dilated, or easily dilatable, before version is attempted. Deep anesthesia is best at all times. The operator should wear rubber gloves reaching to his elbow. No patient should be delivered unless the bladder is empty. Every antiseptic and aseptic precaution should be taken to render the vulva and vagina thoroughly sterile before version is attempted. Primiparity is no bar to version. Both feet should be brought down at once. No attempt should be made to deliver the arms until the scapula is outside the vulva and the anterior arm should be delivered first. The operator must remember that, in delivering the head, extreme flexion is necessary, and can be best produced

by gentle traction with the finger in the child's mouth. If the head remains extended, complications always arise. After the chin and mouth are delivered, mucous will flow from the child's mouth; this should be promptly removed, because many children will breathe before the complete delivery of the head. Excessive pressure upon the mother's abdomen is not necessary and should be avoided because of injuries that may be done to the bladder and lower anterior uterine wall. The aftercoming head may be delivered by the use of the forceps if necessary. The operator should, in every instance, have a perfect knowledge of the attitude of the child in the uterus before version is attempted. Version can be accomplished only by introducing the hand into the fundus and by exploring the uterus and the fetal parts carefully. If the membranes have not ruptured, it is well to separate them from the uterine wall, as high up as possible, before rupture is undertaken. In this way much of the amniotic fluid is retained within the uterus, and version is more easily accomplished. When the knees of the child have been born, version is complete. Version is a procedure which should never be hurried; the operator should at all times be master of the situation. The extreme lithotomy position is not always the best for the patient when a version is performed, but it is convenient, and requires less assistance. The Walcher position gives better results because it relaxes the soft parts of the mother; but the obstetrician can obtain this relaxation only by having two assistants, or by allowing the feet of the patient to rest upon chairs. When the child is born, it is placed upon the mother's abdomen upon its right side, and is kept there until the cord is cut. I should like, at this point, to enter a protest against the too common practice of spanking or beating the child to make it breathe. This is wholly unnecessary, for all we do is to hold the baby up, with its head down to allow the mucous to run out of its mouth, and then breathe a few times upon its chest. Respiration invariably takes place. The third stage of labor can be completed by delivering the placenta manually; but I have had two experiences in which I was obliged to deliver the placenta first, and then bring down the child. In each instance the child lived.

It makes no difference whether this method is termed a pre-meditated version or an elective version, since the results secured are preferable to those obtained by an even moderately difficult forceps delivery.

The maternal mortality, in properly selected cases, should be *nil*. The maternal morbidity is no greater than that in normal cases, as my charts will show. In my experience the mutilation of the soft

parts of the mother is less than that resulting from the use of the forceps, and the patients leave in good condition.

The principal dangers to the child are due, first, to a prolapsed cord, partial, complete, or concealed, the last being more common than is generally supposed; and secondly, to prolonged pressure of the uterus upon the child, as in cases of faulty presentation, and in the border-line cases of contracted pelvis. The intelligent application of the forceps to the aftercoming head has greatly reduced the fetal mortality and morbidity.

Version is easier of performance where the amniotic fluid has not entirely escaped, but the operation may be readily performed in any case in which the uterus is not too firmly contracted around the child. Wherever there is still some of the liquor amnii in the uterus, it is best to introduce the forearm as far as possible, using the arm as a plug to prevent the entire escape of the fluid, until the version is accomplished. Green sterilized liquid soap I regard as the best lubricant.

From September 1, 1916, to August 31, 1917, I have delivered 515 cases, a series in which version was performed, for various reasons, 200 times. Adding these cases to the 500 cases reported last year, I now have 700 versions to my credit. Approximately 50 per cent. of the last 200 versions were hospital cases. There was no maternal mortality in this last series; and, if you remember, none in my first 500 cases of version.

Of the series of 200 versions eighty-five were performed in primipara, and 115 in multipara. Forty of these were seen in consultation with physicians, and thirteen were in the care of midwives. One hundred and twenty-six cases were left occipitoposterior positions of the vertex. Forty were of the right occipitoposterior variety. Three times version was performed when the occiput was to the left and anterior, and five times when it was to the right and anterior. Version was performed in these cases in preference to the use of forceps. Of face presentation, mentoposterior position, there were three cases; shoulder presentation, one case; transverse presentation, one case; mentoanterior position, one case; central placenta previa, four cases in multipara with the os dilated or dilatable; lateral placenta, one case; prolapsed cord, fifteen cases, of which six were complete, and nine were of the concealed variety. In fifteen cases the cord was around the child's neck once; in six cases, twice; in one case, five times, and the child lived. In two cases the cord was tightly stretched between the legs, and had to be cut before delivery could be accomplished. Both children lived. The cord was around the neck, and between the legs, in two cases; twice



around the neck and right arm, in one case; three times around the neck and between the legs, in one case, and short cord occurred once.

Instruments were applied to the aftercoming head, ten times. In the last series, there were three cases in which it was necessary to repair the perineum; each case required two silkworm sutures, and in each of these three cases the forceps were used on the aftercoming head. In one of these cases, a primipara, thirty-one years of age, the baby weighed  $9\frac{3}{4}$  pounds; in another, a primipara, twenty-eight years old, the child weighed 9 pounds; in the third, a primipara, thirty years old, the child weighed 11 pounds. All the children were born alive.

There were sixteen stillborn children, of whom one was a hydrocephalus, requiring craniotomy on the aftercoming head. In two cases the fetus was macerated, having been dead for some time. The cause of the death was unknown. There were two stillborn children in the placenta previa cases, and one stillborn in the mento-posterior position. In this case no fetal heart sounds could be heard before the version. One stillbirth was due to short cord, and one was the result of disproportion between the child and the pelvis. This was really a case for abdominal Cesarean section. The remaining eight stillbirths were due to prolapsed cord, two of which belonged to the complete and six to the concealed variety. Ten of these sixteen stillbirths were consultation cases, six of them in the hands of midwives, and four in the care of physicians.

To safeguard maternity by reducing the maternal mortality due to pregnancy, labor, and puerperal complications, is most desirable, and any procedure tending in this direction commends itself without question. According to "American Medicine," July, 1917, a bulletin issued recently by the Children's Bureau of the Department of Labor shows that more women between the ages of fifteen and forty-five years die of puerperal causes than of any other diseases except tuberculosis. About 15,000 maternal deaths, the results of pregnancy and labor, occur annually in the United States, and these figures have shown no decrease since 1900.

I feel, therefore, that my paper has a direct bearing upon this very point and that the proper management of faulty presentations and positions, as described above, must lower the maternal mortality and morbidity. I have shown that, in my practice, I employ version more frequently than any other method of delivery, that my maternal mortality has been *nil*, my maternal morbidity less, and my fetal mortality not greater than that of other obstetricians.



In my paper of last year I recommended and reported twelve cases of version for pendulous abdomen. I also advocate version in cases of large varicose veins of the vulva, vagina, and thighs, because I fear hematomata in these regions, as the veins are apt to cause serious trouble when they break down and become infected.

You may think I find L. O. P. position more frequently than is usual, but this is, probably, because I make an earlier examination and a more careful one. I pay no attention to the sutures or fontanelles, as an accurate diagnosis, based upon these landmarks, is impossible because of the overlapping that always takes place. I depend upon the ear entirely, because the ear is always on the side of the head; but I am always careful in making my diagnosis, as the ear may be folded upon itself.

It is evident that I am advocating version more frequently than the present teaching of obstetrics would seem to justify, but I feel that my procedure is not more dangerous than the practice of waiting for a spontaneous labor, and I am certain that the dangers of a properly performed version have been much exaggerated in the past. Give version a wider field of application, and you shorten the duration of labor and thus lessen the dread and horrors of childbirth so universal among the mothers everywhere.

#### CONCLUSIONS.

Version lessens the shock of labor.

It lessens the dangers due to pressure from and on the head of the child.

Version should never be undertaken until the os is fully dilated or easily dilatable.

The majority of occipitoposterior positions are best treated by version.

Version is as readily performed in the primiparæ as in multiparæ.

The fetal mortality of version should not be as great as that of prolonged labor and instrumental delivery.

Injuries to the child's head are reduced by a properly performed version.

Face presentations are better treated by version.

Prolapsus funis, when the cervix is dilated or dilatable, and the cord is still pulsating, is best treated by version.

Placenta previa, in multiparæ with cervix dilated or dilatable, is best treated by version.

A moderately contracted pelvis, when the child is small, is best treated by version.

## THE MANAGEMENT OF LABOR IN NARROW PELVIS. \*

BY

E. GUSTAV ZINKE, M. D., F. A. C. S.,

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Consultant in Obstetrics to the Cincinnati General Hospital,  
Cincinnati, Ohio.

(With four illustrations.)

*Synopsis.*—THE doctrine of narrow pelvis is not sufficiently understood and its therapy is practised by comparatively few. Four degrees of narrow pelvis are generally accepted. The treatment in the first and second degrees of contraction is not easily determined. Rules for treatment in the two highest grades of contraction are very simple. Points of diagnosis which must guide us in our judgment of cases and which assist us in determining the treatment to be adopted. The test of labor. Prophylactic version. The high forceps justifiable only when the head is well flexed and fixed in the pelvic brim. Craniotomy. Hebosteotomy or symphyseotomy. Abdominal Cesarean section.

One hundred and fifty years of astute and continuous observations on the part of the ablest obstetricians of the eighteenth and nineteenth centuries were required to complete the doctrine of narrow pelvis and its therapy. Deventer (1720) laid the foundation; Litzman and Michaelis (1870) completed the doctrine. Though nearly fifty years have passed, so far as the medical profession in general is concerned, the doctrine of narrow pelvis is hardly understood, and its therapy is practised by but few. This is the author's excuse for bringing the subject before you.

Four degrees of narrow pelvis are generally accepted. The first degree includes the pelvis in which the conjugata vera of the inlet is about 9 cm. in length, or above; the second degree represents all of those cases in which the conjugate measures between 9 and 7 cm.; the third degree comprises all pelvises with a conjugata vera below 7 and down to 5 cm.; the fourth and highest degree of contraction consists of all cases in which the length of the conjugata vera sinks below 5 cm.

In the first degree, 9 cm. or above, labor terminates, as a rule,

\* Read at the Thirtieth Annual Meeting of the American Association of Obstetricians and Gynecologists, Newark, N. J., September 17-19, 1917.

spontaneously. In the second degree, 9 to 7 cm., natural labor may still be possible, but its course is difficult and protracted, and the dangers for both mother and child increase as the contraction approaches 7 cm. In the third degree, 7 to 5 cm., labor *per vias naturales* is possible only by embryotomy. In the fourth degree, 5 cm. and below, the delivery even of a mutilated child is considered impossible.

The rules for treatment in the two highest grades are perfectly simple. When the conjugata vera is between 7 and 5 cm. in length, natural delivery is made possible only by reducing the size of the child's head. When the conjugate is below 5 cm., even the demolished skull of the fetus may not pass the narrow space at the brim. In the third degree of pelvic contraction, 7 to 5 cm., Cesarean section is *relatively* indicated because it is resorted to only in the interest of the child; in the fourth degree, 5 cm. or below, Cesarean section is positively indicated because it is the only therapy by which both lives may be saved.

Thorough familiarity with the technic of abdominal hysterotomy and a perfect surgical asepsis make the prognosis of this operation very favorable if performed shortly before or soon after the commencement of labor, before the bag of waters has ruptured, before other attempts at delivery have been made, and when the patient is free from fever. Under these conditions the operation is perfectly justifiable and one need not hesitate to resort to it for relative indications alone. When, however, labor has lasted a long time, when the amniotic fluid is completely discharged, when frequent examinations or attempts at delivery have been made, or if fever is present and infection exists, the prognosis of Cesarean section is far less favorable. As in these cases the life of the child is already more or less compromised, craniotomy is preferred in all cases falling within the third degree of narrow pelvis.

While it is true that Cesarean section has been successfully employed in some cases in which efforts to deliver the child have been resorted to, even when infection was present, under such circumstances, the maternal mortality is always high.

For the more moderate, or first degree of pelvic contraction, 9 cm. or upward, the mode of procedure is easily determined. First, the test of labor, in the great majority of cases, terminates in spontaneous delivery and a living child; if labor is very slow, the so fully dilated and the head well flexed and fixed at the inlet, the use of the forceps is justifiable (Fig. 1). This, however, should be the limit of the so-called high application of the forceps in narrow

pelvis, and the instruments should never be applied in these cases when the head is arrested above the brim.

In the remaining or second degree of narrow pelvis, 9 to 7 cm., the problem as to which mode of delivery will give the best result for both mother and child is not so easily solved. Even in these cases labor may terminate spontaneously; but all of the obstetric operations, version, forceps, pubiotomy, craniotomy, embryotomy, and Cesarean section, may suggest themselves for earnest consideration.

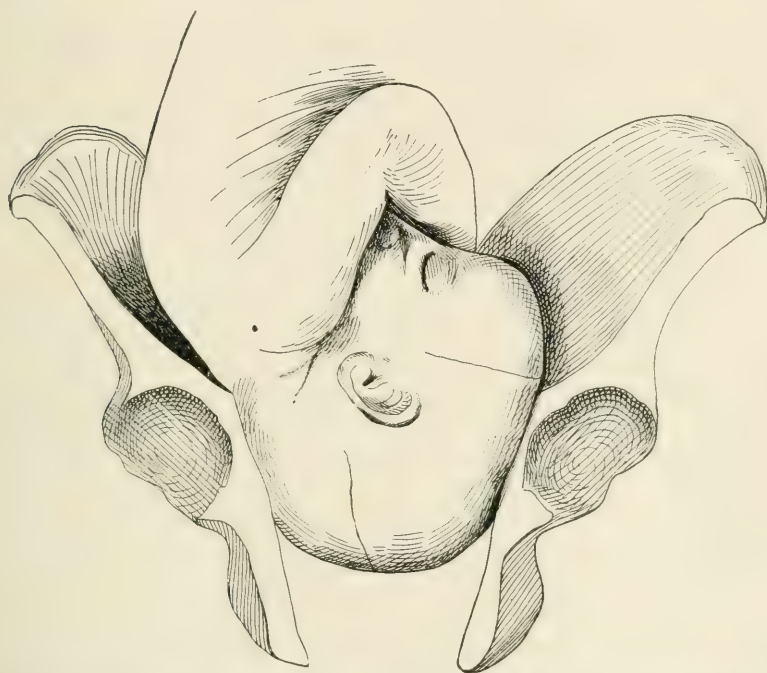


FIG. 1.—Head well flexed in moderately contracted pelvis. When arrested at this stage it is favorable to the application of the forceps.

Whether the patient may be safely subjected to the test of labor, or whether it is advisable to interfere at once, or as soon as possible, cannot be determined by the degree of pelvic contraction alone. Much will depend upon whether the presenting head is large or small, hard or easy of configuration; whether it is well flexed and its position favorable, whether the uterus contracts well, and whether or not the abdominal pressure is normal and effective. All of these conditions cannot be properly considered and determined before the membranes have ruptured; consequently, in the beginning of



labor of all cases of moderate pelvic contraction, we must watch and wait. During this period of watchful waiting we have time to observe the manner in which the first stage of labor proceeds.

It is important to remember that in cases of narrow pelvis the bag of waters is apt to rupture prematurely. If this occurs, obliteration of the cervix and dilatation of the os are, necessarily, protracted. Not only is the entire parturient tract thus opened to admit without hindrance dangerous germs into the amniotic cavity, but the life of the child is also threatened because of the escape of the liquor amnii, long-continued contraction of the uterus over the child, and the consequent interference with the placental circulation. The longer labor lasts under such circumstances, the greater the danger of an infection and the birth of an asphyxiated child.

To keep the membranes intact as long as possible must be the first object of the attendant. The best means of securing this is to keep the patient quietly in bed and upon her side during the first stage of labor; to permit her to sit up, to throw herself about in bed, to walk around, or to bear down, must not be tolerated.

If the membranes fill up extensively with amniotic fluid and tend to protrude into the vagina, the colpeurynter may be used to advantage. It will prevent protrusion of the membranes into the vagina by counterpressure from below. Even when the membranes have ruptured the colpeurynter may still prove of value. With its assistance the imperfectly obliterated cervix and undilated os may be so wedged in between the head and colpeurynter as to prevent the too liberal discharge of the liquor amnii and, at the same time, hasten effacement of the cervix and dilatation of the os.

When the os is fully dilated, and when there is no further obstacle to the descent of the presenting part of the fetus, we must determine, as nearly as possible, the degree of the mechanical disproportion between the fetal head and the pelvic cavity; that is, besides the character of the pelvic contraction we should ascertain most carefully the size of the child's head and the position in which it presents itself. The size of the fetal head may be approximately estimated by the length and thickness of the child, and by the distance between the anterior and posterior fontanelles. But palpation—digital and manual—is not always satisfactory, and sometimes proves deceptive.

Mueller's method of pressing the head into the pelvic inlet commends itself highly. One hand of the attendant, or, better still, both hands of an assistant, press the head into the pelvis through the abdominal wall from above, while one finger in the vagina

is in contact with the presenting head. In this way the head lies between the examining hands and we can judge, with considerable accuracy, its size and relation to the pelvic brim. The smaller the pelvis, or the larger the head, the greater the difficulty of pressing the latter into the pelvis, and the more may we see and feel its globular shape above the symphysis pubes (Figs. 2 and 3).

One of the most valuable indications of the size of the fetal head is the direction of the sagittal suture. If this suture runs transversely close to the promontory or the symphysis pubis, and only a

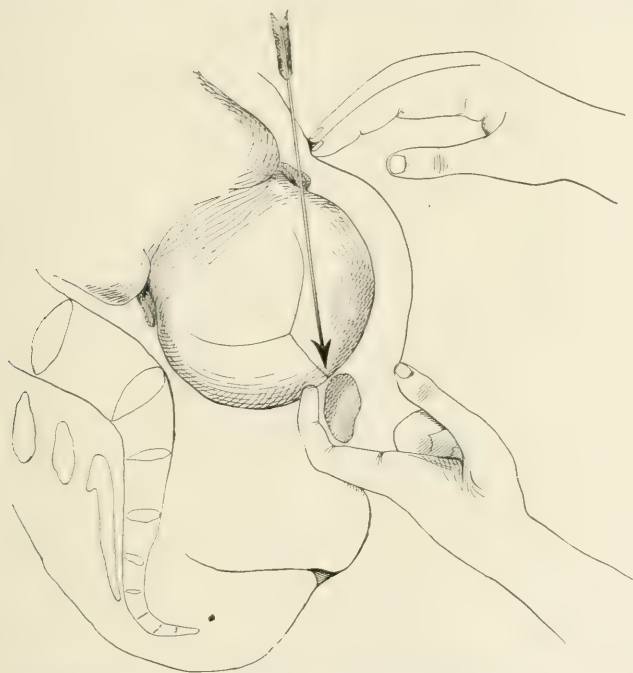


FIG. 2.—Mueller's method of pressing the head into the contracted pelvic inlet. The disproportion between the head and the brim is considerable.

small portion of the upper parietal bone can be felt, the disproportion between passage and passenger is great; if the reverse obtains, however, and the sagittal suture is near the axis of the pelvic cavity, and both parietal bones can be palpated over a considerable extent, the disproportion is small.

When tenderness and swelling of the pelvic soft parts, or the presence of a caput succedaneum makes it impossible to judge the case correctly, the examination must then be made with two fingers and under an anesthetic (Fig. 2). The attendant must have no

doubt in his mind regarding the character and degree of the pelvic contraction, as well as the size and position of the head, before he concludes definitely what course to pursue.

The problem to be solved after the diagnosis has been made, then, is this: Is the case one which justifies the test of labor, or is it one for prophylactic version, forceps, perforation, pubiotomy, or possibly for Cesarean section?

When the disproportion between the head and pelvis is small, the head well flexed and in a favorable position at the brim, when

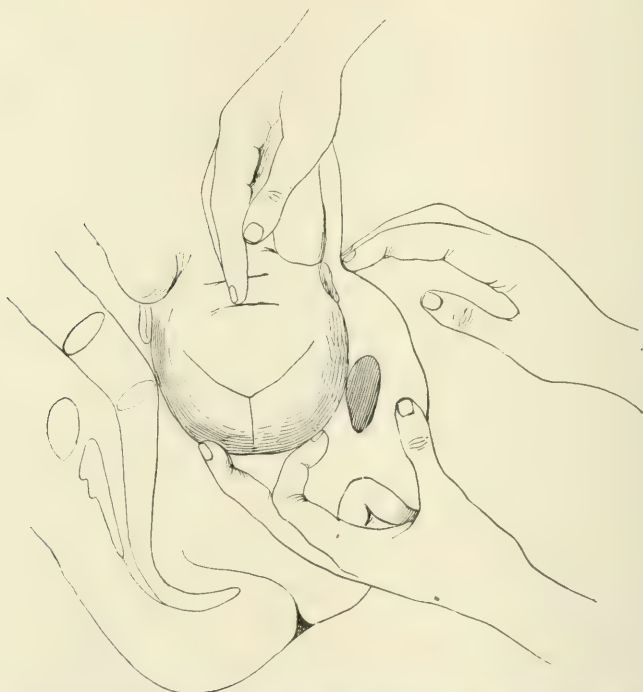


FIG. 3.—Shows that the disproportion is not great and the head forced into pelvic cavity by Mueller's method.

the pains are regular, strong, and effective, the best treatment for both mother and child is to wait, the *test of labor*. Nature's expulsive powers take better care of the molding of the head and its slow forced descent through the narrow pelvis, than any other operative aid can possibly accomplish. Tens of thousands of cases of narrow pelvis have delivered themselves spontaneously and successfully without serious injury to mother or child. This statement cannot be refuted; but it should be reiterated emphatically

again and again, for many busy obstetricians, whether specialists or not, refuse to recognize nature's slow but efficient work because they have no patience and want to get through with the case as quickly as possible.

An occasional examination, to note the progress of labor, is necessary. As soon as the expulsive pains become manifest, the usual support for the patient's hands and feet must be given in order to obtain, with the least suffering, the greatest benefit from the abdominal pressure. Pressure upon that portion of the fetal head which still remains above the brim materially assists in forcing it into the pelvis. Powerful uterine contractions and energetic abdominal pressure are indispensable for spontaneous labor in narrow pelvis. When the pains and abdominal pressure are weak from lack of innervation, imperfect uterine musculature, uterine inertia, or flaccid abdominal walls, or when the patient is nervous and exceedingly sensitive, when the head shows no disposition to descend after the membranes have ruptured and when it does not engage firmly, the test of labor must be abandoned and prophylactic version substituted.

As to the advantages and disadvantages of prophylactic version, obstetricians differ widely. An after-coming head, even when easy of adaptation and molding, unless promptly delivered, may end in the delivery of an asphyxiated or dead child. A conjugate diameter under 8 cm. is quite unfavorable for the infant. The prospects of a living child are further lessened when it is born asphyxiated; many children die in consequence within a few days after birth.

Prophylactic version is far more favorable to the child in the multiparous than in the primiparous woman. In the latter the rigidity of the pelvic soft parts makes the extraction of the after-coming head more difficult just at the time when quick delivery is so essential to the life of the child. Version is comparatively easy of accomplishment if performed soon after the membranes have ruptured, and the fetus is more apt to survive. Version is more difficult and the prospects for the life of the child are less favorable in proportion to the time lost between the rupture of the membranes and the operation.

As far as the mother is concerned, prophylactic version furnishes better results than the test of labor. Version and extraction of the child consume but a short time, the soft parts are less subject to pressure necrosis, the patient is saved many hours of suffering and the danger of infection is materially reduced.



The obstetrician is not infrequently embarrassed when called upon to decide whether in the case before him, it is best to subject the patient to the test of labor or to resort, without loss of time, to prophylactic version after the bag of waters has broken. If, in case of version, the child is delivered dead or asphyxiated, the obstetrician may justly say to himself that a better result might have been obtained with the test of labor. Again, if waiting leads to disappointment, he regrets not having resorted to prophylactic version earlier in the progress of the case. In all instances of abnormal head presentation, such as deflection, occipitoposterior position, or brow or face presentation, prophylactic version is always the proper procedure in cases of moderately contracted pelvis.

*What of the use of forceps in cases of narrow pelvis?* There is a place for them. When a well-flexed head presents in a favorable position and is fixed in the inlet and labor is arrested in spite of vigorous uterine contractions and brave efforts at bearing-down on the part of the patient, it is well to think of forceps (Fig. 1). Under such circumstances prophylactic version is not justifiable. To continue the test of labor will result in serious injury to the mother's soft parts, asphyxia, or the death of the child and, possibly, rupture of the uterus in certain cases. No obstetrician worthy of the name will permit his patient to suffer many hours under conditions like this. No one should wait from twelve to twenty-four hours, not even three hours; nor much less wait until the patient's condition arouses anxiety by an increase in temperature, pulse frequency, a tender abdomen, and a hot, dry, and sensitive vagina. A mother exhausted in the extreme, nervous and excited, filled with apprehension, who refuses to be comforted, and whose sole thought is to be relieved, is no longer a proper subject for waiting. Indeed, the obstetrician who knows his business and who does his duty, will not permit his patient even to come to such an extremity. Long before this juncture he will have given the forceps a careful and judicious trial. In many of these cases the delivery of a living child results and comparatively little injury to the mother is recorded.

If after an intelligent, earnest, and a moderate attempt at delivery with the forceps nothing is accomplished, the choice lies between perforation, pubiotomy, or hebstectomy and, possibly, Cesarean section. Repeated and protracted efforts at delivery with the forceps, under the conditions just described, cannot be condemned too severely. The forceps should never be applied to a head floating loosely above the inlet as illustrated in Fig. 4.

Craniotomy is to be thought of only when the child is dead. The problem is a different one, however, when the child is still living and when, in spite of all it has endured, the heart continues to beat strongly and regularly. Prophylactic version has already been excluded. The forceps have failed. The problem now resolves itself into perforation of the living child, splitting of the bony ring of the pelvis, or abdominal hysterotomy. If the patient be at her home and aseptic operative intervention doubtful or impos-

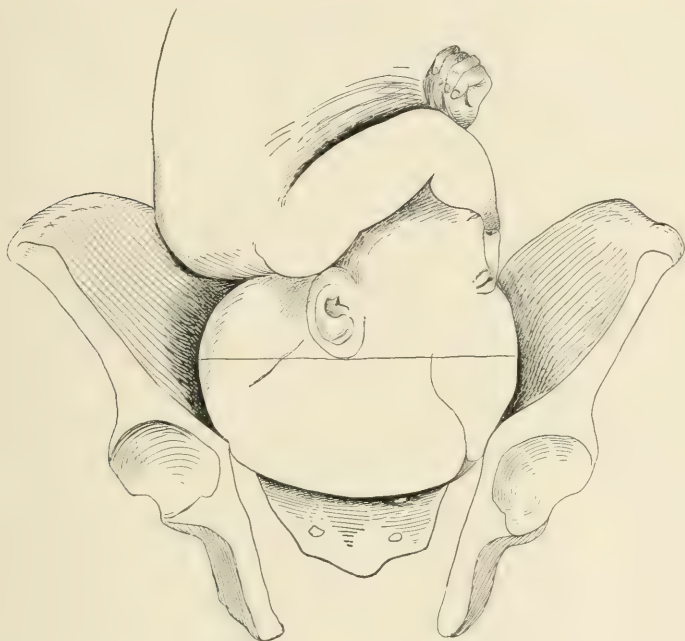


FIG. 4.—Head above brim in justo-minor pelvis; deflected, and unfavorable for the application of the forceps.

sible, perforation of the head of the living child is considered justifiable by the best authorities. This operation gives the mother the best chance to live. It is far different when the patient is in a hospital surrounded by all the benefits that may be derived from asepsis. Here craniotomy upon the living child is, in the management of the cases under consideration, totally unjustifiable; hebosteotomy, symphyseotomy, or Cesarean section may be performed with almost perfect safety to both mother and child.

Splitting the bony ring of the pelvis by a subcutaneous symphyseotomy or hebosteotomy creates so much space that, even in

cases of flat and generally contracted pelvis with a conjugate of 7 cm., a head of moderate size may pass through the cavity with more or less ease. Most of the present-day American and English obstetricians prefer Cesarean section even to subcutaneous division of the symphysis or pubic bones, notwithstanding that the after-care of pubiotomy or symphyseotomy has been very much simplified. That there is a disagreeable feature to the bone-splitting operation cannot be denied; but it ought not be forgotten that Cesarean section, while easily and quickly performed, necessitates the opening of the abdominal and uterine cavities. Even though this operation is now performed hundreds of times successfully for various indications, the fact remains that it is a formidable procedure and that it is never free from grave danger.

4 WEST SEVENTH STREET.

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### A CASE OF GANGRENE OF UTERINE FIBROID FOLLOWING PARTURITION; PANHYSTERECTOMY.\*

BY

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THE specimen presented was removed from Mrs. W., colored, aged twenty-four. As far as obtainable, her family history was

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good. Mumps was the only disease she had ever had. She began to menstruate at the age of fifteen years. At first, she was very irregular, but after marriage became regular. Menstruation never lasted more than four days at a time, and was moderate in amount, associated with slight pain. Married eight years and had four normal deliveries the first seven years before, the last in Lebanon Hospital. Had no operations and never had a vaginal discharge.

January 30, 1916, she was admitted to Lebanon Hospital with a temperature of  $100^{\circ}$  F.; pulse 88; respiration 24. The same day was delivered normally of a living, premature, female child. The temperature did not fall. I first saw her February first, when she complained of abdominal pain and tenderness; temperature  $100.2^{\circ}$  F.; pulse 120; respiration 24. On examination the fundus was found to be on a level with the umbilicus, and tender.

By vagina the os was found open and a tumor was easily palpated within the uterine cavity, attached by a broad base to the lower portion of the uterine wall. There was a profuse lochia, but no fetor. A diagnosis of submucous fibroids was made. The patient's temperature gradually rose and on the fourth day following delivery was  $102^{\circ}$  F.; pulse 120; respiration 28. I believed that we had a gangrenous fibroid to deal with. She was taken to the operating room and panhysterectomy by the abdominal route performed. There was a gangrenous fibroid, the whole endometrium was sloughing and very foul, the uterine wall was thick and soft, but as far as could be determined, there was no involvement of the peritoneum.

In performing the operation every possible care was taken to protect the neighboring structures and the abdominal wall with gauze sponges. The upper end of the vagina and the abdominal wall were closed. The morning following the operation the temperature was  $99.6^{\circ}$  F., but during the afternoon it rose to  $103.2^{\circ}$  F.; pulse 128; respiration 28. For the next four days the temperature was between  $104.4^{\circ}$ , and  $102^{\circ}$ ; the pulse was between 100 and 156, and the fat in the abdominal wound broke down. A wet bichloride dressing was applied. She gradually improved until the 18th day after the operation, when a left lobar pneumonia developed, with temperature as high as  $104.2^{\circ}$ ; pulse 158; respiration 50. This condition lasted for three days, after which all of the symptoms gradually improved, and she was discharged from the hospital cured, March 16, 1916.

*Remarks.*—Fortunately this is a rare complication of parturition; but previous to this I had seen two similar cases, and from experience with these, though it is small, I am convinced that early panhysterectomy, before the peritoneum is involved, gives the patient the best chance for her life.



OSTEOMA OF THE DESCENDING RAMUS OF THE PUBES  
AND ASCENDING RAMUS OF THE ISCHIUM OB-  
STRUCTING THE PELVIC OUTLET; PREG-  
NANCY; REMOVAL OF OSTEOMA.\*

BY

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New York City.

I PRESENT this case on account of the rarity of the occurrence of osteoma in this situation. In three works on obstetrics referred to by me, I saw no mention of dystocia from this cause, and in my own examination of women, pregnant and nonpregnant, in my office and hospital work, this is the only one I have seen. In other parts of the body the occurrence of osteoma is not infrequent.

The description of osteoma presented by Senn is so clear and succinct that I cannot do better than quote it.

"An osteoma is a tumor which possesses a structure resembling that of cancellous or compact bone, produced from a congenital or postnatal matrix of osteoblasts. Osteomata occur usually in connection with some part of the skeleton, but they are also found in parts and organs that have no genetic relations with the skeleton, as in the pia mater and the brain. It is doubtful if the tumors which are not in connection with the bone present the structure of bone so perfectly as do osseous tumors of the skeleton. Fleischer described an osteoma of the tendon of the iliopsoas muscle in which he found the Haversian canals and the medullary tissue arranged in the same typical manner as in normal bone. In another heterotopic osteoma described by the same author, the tumor was situated upon the inner surface of the dura mater. In both instances bone-production was traced to the connective tissue and independently of the presence of osteoblasts. According to Fleischer's interpretation, the connective tissue at the seat of tumor-formation became more vascular and presented active tissue-proliferation, and was transformed into hyaline masses in the interior of which the bone-cells appeared. The hyaline lumps become coalescent and undergo calcification. Osteoblasts were active in the further development of bone. The capacity of connective tissue to produce bone has been recognized for a long time, and this view of the bone-producing power of connective tissue is accepted by most of the modern pathologists.

"A distinction must be made between calcification and ossification of connective tissue. The production of bone is carried on in

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the embryo by a distinct and specific part of the mesoblast, resulting in the formation of the skeleton and the growth of bone, and the production of new bone can take place only from a matrix of cells derived from the osseous system. The displacement of osteogenetic matrices into the surrounding tissues is as liable to occur as the displacement of matrices of epiblastic and hypoblastic tissue. Heterotopic osteomata are usually found in close proximity to a bone. Heterotopic matrices of osteoblasts usually result in imperfect development of the tissue of the tumor. Virchow found in the apex of the lung an osteoma in which Haversian canals and medullary spaces were absent. Steudener found a number of small osteomata near the trachea, but entirely distinct from its rings. Lesser found in the lung an osteoma which presented under the microscope all the histological elements and the typical structure of bone.

"The metaplastic theory concerning the origin of bone is no longer tenable. A careful etiological distinction must also be made between a true osteoma and an exostosis. The origin of the former must be restricted within the limits of the definition to a growth of bone from a matrix of osteoblasts either in the bone or by displacement from a bone, while the latter is the result of a localized or diffuse hypertrophy usually following a reparative process."

The two varieties of osteoma, according to their structure, are osteoma durum and osteoma spongiosum. The latter variety, of which this case consisted, usually has its origin from the epiphyses of long bones. In this case it would appear that the tumor was an exostosis occurring at the point of union of the ascending ramus of the ischium, with the descending ramus of the pubes and in the course of its development both rami became converted into a spongy bony mass constituting the tumor.

This type of tumor is of slow growth with a tendency to limitation as to size. It does not form metastasis nor tend to recur when removed. It is painless, except from the results of pressure. It is, therefore, a benign growth. The pressure results, however, may be fatal, as where the brain is affected, or might have proved fatal in this case as a result of obstruction of the pelvic outlet, had intervention not occurred.

The case is as follows: Mrs. C. G., aged twenty-five, married three years. One child, age two and one-half years. Entered the Post-Graduate Hospital, March 23, 1916.

About two years ago felt a little lump, hard and painless, on the bone to the left of the vagina. Was referred to me at the Post-Graduate Hospital. She was then three months pregnant.

Examination showed a hard bony mass arising from the ramus of the pubes and ischium, and almost obstructing the pelvic outlet, growing forward and inward; having, apparently, beneath the skin numerous sharp excrescences. A Wassermann examination of the blood proved negative.

Operation was performed March 27, 1916, and an incision made over the irregular mass from the body of the pubes down along the mass to the tuberosity of the ischium. The material was found to consist of a very irregular, spiculated, spongy, osseous structure. With a large rongeur this was cut away until the whole descending ramus of the pubes, part of the body of the pubes adjacent and the ascending ramus of the ischium and part of the tuberosity of the ischium, were removed. The soft tissues were then sutured together and a small drain placed in the center. The drain was removed in forty-eight hours. Healing was prompt and rapid, and in about two weeks the patient was allowed to sit up. She left the hospital on April 14th, being able to walk without limping.

On October 30, 1916, she was confined by Dr. C. J. Millis, who had referred her to me. The labor was normal; entire duration about fourteen hours. The baby was healthy, and strong.

Examination two and one-half months after confinement showed a firm, fibrous band extending from the body of the pubes to the tuberosity of the ischium. There was no impairment whatever of the locomotion and no evidence of any return of the growth.

The pathological report is as follows:

Patient, C. G., No. 10857, aged twenty-four.

Specimen taken March 27, 1916. Specimen received March 28, 1916. Report made April 26, 1916.

*Nature of Specimen.*—Growth from pelvic bone.

*Gross.*—Three pieces of irregular tissue of cancellous bone and cartilage. One surface is covered over with periosteum but is extremely irregular, being studded with small nobs. The under and cut surface has the appearance of cancellous bone.

*Microscopic.*—Covering the outer border of the growth is a rather dense irregular layer of cartilage, beneath which is cancellous bone. The cancellous bone contains large sinuses, some of which are filled with blood. It is very hard in places from the abundant deposits of lime-salts. The major part of the growth and its principal structures are bony in nature.

*Diagnosis.*—Osteoma.

This case is reported on account of the rarity of the condition, the extremely satisfactory result of operation, the only adverse circumstance connected with which is the possible weakening of the pelvic framework of the body. This, however, is in a large measure counteracted by the firm ligamentous structure which has taken the place of the bone and serves perfectly for the attachment of the muscles formerly attached to the bone in that situation.

## A CASE OF PREGNANCY WITH UNUSUAL COMPLICATIONS.\*

BY

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THE following case is reported because of its unusual complications.

Mrs.—came under my care March 16, 1917, being referred by her family physician. She is 5 feet 2 inches in height, weighs 165 pounds, has never had any living children, but has had two miscarriages. The last menstruation occurred October 15, 1916.

Some five years ago she consulted numerous physicians whose diagnoses all agreed, that is, that she had a large fibroid which ought to be removed. This, however, was never agreed to and for the past five years she has not been well, and has taken on flesh rapidly. She states that since her menstruation ceased, she has hardly been able to get about, and has had retching and vomiting spells.

Examination revealed an irregularly shaped abdomen, unusually large, extending up to the ensiform cartilage and yet, according to her count, if pregnant, she could not be over five months. The vaginal walls were somewhat discolored, the cervix seemed normal to the touch, although reached with difficulty, and the vault of vagina was filled with hard tissue, like a fibroid. The abdomen was very uneven, large hard masses could be outlined on either side extending to the level of the umbilicus, and above a round smooth mass could be felt up to the ensiform cartilage. No fetal heart but a bruit could be heard and for the time being, the diagnosis was doubtful. The patient was removed to the Good Samaritan Hospital. Her temperature was 99° F. and pulse 100. Repeated daily examinations were made without coming to any definite conclusion. On the twenty-first day of March, that is five days after admission to hospital, an acute appendicitis occurred with its usual phenomena, and after much persuasion, an appendectomy was done the following morning. A thickened congested appendix was removed, which contained an enterolith, some mucus and a drop of pus. The bowel movements before and after the appendectomy were most offensive. While the abdomen was opened the hand was gently swept over the tumor mass which was found to be made up of fibroid tissue encircling the lower half of the uterus up to the umbilicus, and to the sides of pelvic and abdominal walls. The balance of the tumor mass (the uterus) extended up to the ensiform cartilage like a full-time pregnancy. The walls of upper uterus were very soft and of a light grayish color. The sensation to palpation was similar to that of a soft pulpy cystic mass, and not at all like a pregnant uterus.

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No fetal body was outlined. That evening patient became delirious, remained so for a period of twelve hours, temperature  $103^{\circ}$ , pulse 150, but the following day showed a marked improvement in general condition.

By daily observation and numerous examinations I at last became convinced that a pregnancy existed. Up to this time numerous blood and urine examinations were made, but nothing of great importance noticed, except the marked increase of leukocytes. A consultation was held with Dr. Bonifield, who was inclined to doubt the existence of pregnancy, claiming that the condition was like a degenerated fibroid. The puzzling situation was very soon cleared up we thought, by the rupture that evening of the membranes. The expulsion of a dead five months' fetus on April 6th was without pain, and only occupied two hours from the time of rupture of membranes to birth of child. The cord was normal in structure for 6 inches from umbilicus of child, but from there on it was decomposed. Following the birth of the fetus, pus immediately gushed from the uterine cavity accompanied by loud explosions and bubbling of gas. This discharge saturated the clothing, the bed, ran down on to the floor, was of most foul odor, and we estimated it roughly as about a gallon in amount. The placenta could not be delivered by moderate pressure from above nor could it be extracted, as the fibroid mass was in the way of any manual delivery, and long placental forceps could not reach the fundus. The walls of the uterus could not be satisfactorily outlined. The odor from the profuse discharge was most obnoxious until the expulsion and daily partial extraction of parts of presenting placenta. The bacillus pyocyaneus was found in the discharge. The patient again became delirious with here and there rational moments, at which time, she complained of most violent general abdominal pain. The delirious and semidelirious state continued for a period of three days. The following serious complication added to the gravity of case. On

April 7, patient secreted 2 ounces of urine, temperature  $97^{\circ}$ , pulse 84; on April 8, patient secreted  $7\frac{1}{2}$  ounces of urine, temperature  $96-97^{\circ}$ , pulse 80-86; April 9, patient secreted 6 ounces of urine, temperature  $95-96^{\circ}$ , pulse 80; April 10, patient secreted 16 ounces of urine, temperature  $95-96^{\circ}$ , pulse 80; April 11, patient secreted 41 ounces of urine, temperature  $96-98^{\circ}$ , pulse 90.

From the latter date onward the temperature became normal or a little above. All of placental tissue as far as could be determined had now been expelled. About 11.00 A. M. April 11th, violent attacks of hiccoughing, accompanied by most offensive flatus continued until 9.00 P. M., when repeated fainting attacks supervened, followed by deep coma which lasted until 7 o'clock the following morning. On April 12th at 8.00 A. M. a sudden spasm of abdominal pain ensued followed immediately by a vaginal discharge of about a quart of serous fluid not unlike that of amniotic fluid, but very offensive, and all day this very watery discharge continued. Vomiting began again and both bowels and urine became involuntary, patient passed into a semidelirious state, and at times grinding the teeth. On April 13th some

improvement took place and the discharge became bloody but was still most offensive. The temperature however was only 99° per rectum and pulse 108. On April 14th, vomiting of a greenish fluid took place. There was intense itching over the body, and a rash appeared on right chest and arm not unlike that of ivy poisoning. On April 19th, the temperature was 101° per rectum, involuntary bowel movements continued with occasional vomiting. The rash had disappeared but great pain and stiffness was noted in the right leg, especially around knee-joint. On April 20th, a remarkable improvement came on over night, the temperature and pulse becoming normal. April 26th, patient removed to her home. By July 28th, the patient was walking about the house, gained weight (up to 165 pounds), looked well, had a good appetite, no vaginal discharge and slept well.

I have merely presented a general clinical history of the case eliminating all reports of treatment as it was purely along symptomatic lines, trying to meet what seemed hopeless conditions as they arose.

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## TEN YEARS' EXPERIENCE WITH EARLY MOBILIZATION AFTER ABDOMINAL PELVIC OPERATIONS.\*

BY

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RIES of Chicago, in the *Journal of the American Medical Association*, August, 1899, announced that after a trial of four years he placed little or no restriction on the movements of patients after abdominal section or vaginal celiotomy. They were permitted out of bed as soon as they were able to get up. Manly, Wiggin and Schaefer, agreed with the new ideas set forth. Twelve years ago Boldt began the early mobilization of his abdominal cases. Fifteen years before this he was ordering his vaginal celiotomy cases out of bed after forty-eight hours. In 1907 Brothers said the statistics of Ries, Boldt, Chandler and himself covered 1000 laparotomies and in no case had an accident occurred that could be attributed to early mobilization of the patient. Moynihan in his book, "*Abdominal Operations*", says if the patient is doing well the sooner he is allowed to sit up the better. Mayo has never seen a case of embolism in a patient out of bed before the seventh day and believes early mobilization prevents thrombosis and embolism. Pfannenstiel of Kiel (*AMERICAN JOURNAL OF OBSTETRICS*, August, 1908) said: Con-

\* Read by title before American Association of Obstetricians and Gynecologists, September, 1917, Newark, N. J.

valescence is more rapid, the healing proceeded more quickly in patients operated on by the transverse incision, especially since following the example of American operators and König treatment in Germany, by allowing patients to get up and move about in a short time after the operation. Basin invented his operation, so as to get the soldiers back in the army in two weeks.

At a time when I was operating in a hospital where Dr. Boldt had a large number of cases, I saw the advantages of early mobilization and decided to try it. In planning an operation the one great object should be to bring about as early and complete restoration of health and working ability as possible. Our operative technic should be such as will assure the greatest safety to the patient and the after-treatment, that which will secure the greatest comfort and least risk of complications. This accomplished by simple preparation, the transverse incision, the use of atropine and eserine salicylate on the table, with early mobilization of the patient. Early mobilization is applicable to 95 per cent. of cases. Neurasthenic patients are not deprived of rest, but are allowed to move about. We have never had an accident from early mobilization in ten years. Some operators have reported 1 per cent. of embolism. Phlebitis occurs usually between the tenth and twentieth day. Mayo believes early rising prevents it. Most of our cases are home by that time.

The advantages of early mobilization are less nausea, vomiting and distention, earlier and spontaneous action of the bowels, less liability to circulatory changes, less weakening of the muscles, better assimilation of food, early return to working ability, lessened expense to patient. The only disadvantage is that patients do not think much of an operation has been done. Patients in the hospital will tell the patient her operation was not a major operation.

The 1500 cases reported are taken from the clinic of Dr. Brooks H. Wells and were operated on by him, with my assistance, or were operated on by myself. These cases I had charge of and directed the care and after-treatment. The results obtained are largely due to the technic learned from him and to his suggestions in the preparatory and after-treatment.

A thorough examination is made including heart, kidney and lungs. The heart is considered normal if no edema, cough or shortness of breath exists. Fibroid heart, dilatation, fatty brown atrophy and degenerative changes are most feared. They can be excluded if the heart is normally situated and there is a normal pulse.

In anemia, if extreme, the operation is contraindicated. If the hemoglobin is below 33 per cent. preparatory treatment is necessary



before operation. In chronic anemia from fibroids there is liable to be brown atrophy of the heart. In chronic inflammation or tuberculosis of the lungs, the operation is only justifiable if the disease is quiescent. Cases of acute or chronic inflammation of the kidneys do not stand the operation well. The presence of indican shows there is toxic absorption from the bowel and that these should be thoroughly moved before operation. In diabetes the chief danger is from coma. If nutrition is good and the sugar percentage low, the operation, if very necessary, is done.

Kelly says that about 5 per cent. of gynecological patients have tube casts and albumin, that a higher percentage have them after the operation. This is usually transient. Nephritis may be caused by tumors pressing on the ureters, infection from an exudate or infection of the pelvic peritoneum. In patients with nephritis, the operation should be quickly done with little loss of blood, as shock is not well borne. If casts are present, prolong the preparatory treatment and give lots of water. In acute nephritis with granular and epithelial casts operation is contraindicated.

Preparation of the patient is very simple. Severe purging is avoided because it weakens the patient and produces postoperative abdominal distension. If the patient is badly constipated castor oil, 2 ounces, is given forty-eight hours before operation. Purgatives and fasting cause distention and acidosis. The normal condition of the bowel is that of partial distention. If the bowels are completely emptied by purging and fasting, Nature causes the formation of gas to make a bolus for the intestine to act upon, and we get distention, plus a weakening of the patient and a tendency to acidosis. The patient is given full diet until and including the evening of the operation. All that is necessary, in most patients, is to give an enema the night before the operation to empty the lower bowel. An enema should never be given the morning of the operation, if it is, the bowels will move on the table, or in the dressings after the operation. The abdomen is shaved, washed with alcohol and a sterile dressing applied. If necessary the vulva is also shaved and an iodine douche, 1 dram to the quart, is given. If the patient is nervous, veronal or strontium bromide is administered. In the morning the patient may be allowed a cup of coffee with a small amount of cream. She is encouraged to drink water. If the patient is very nervous before the operation, morphine sulphate gr.  $\frac{1}{6}$ , and atropine sulphate gr.  $\frac{1}{150}$  are given one hour before. The field of operation is swabbed with tincture of iodine. The iodine must be applied to the dry skin. If applied evenly over the



abdomen and washed off after the operation with alcohol, there is no irritation. At the end of the operation, iodine is again applied to the incision which is then covered with sterile gauze.

The vagina, cervix, and vulva are dried and tincture of iodine is applied if the operation is to be done on the cervix or vagina. The blood lost during the operation soon washes most of the iodine away. After the operation the vagina should always be packed for twelve hours to close up dead spaces and keep the vaginal surfaces apart. In one case where this was not done, Dr. Wells found that the raw anterior and posterior walls had become adherent. They were, however, easily separated with the finger. The bladder should always be evacuated before the patient is taken to the operating room. The catheter is never used unless necessary.

The Pfannenstiël incision is used in all gynecological operations; the transverse incision is made for gall-bladder operations. In the Pfannenstiël incision the bowels are covered by the upper flap and seldom require laparotomy pads. If pads are used, they are wet in saline and care is taken to just lay them over the intestines and not to rub the peritoneum. Sponges are used as little as possible; they rub off epithelium, cause distention and adhesions. The Pfannenstiël incision is made in the pubic fold just above the pubes. Clamps are not put on small vessels in the fat, as they cause injury to tissue of low vitality and invite infection. Most of the bleeding from the fat will stop spontaneously. Before closing, however, all bleeding must be stopped to prevent the formation of a hematoma. In cases of large tumors the incision through the fascia is made transversely into the oblique muscles, to the iliac spines and the rectus sheath is separated down to the pubes and up as far as the navel. Care must be taken not to tear the twelfth nerves, that come through the recti muscles, pierce their sheaths and supply the fascia, fat and skin. The linea alba is now divided from the navel to the pubes if necessary. The recti muscles are then separated and the peritoneum incised above. Care is taken, in going toward the bladder, to stop when the fat gets thicker, and little bleeding points are encountered; for we are then cutting in the prevesical fat.

Plain catgut No. 2 is used for pelvic operations; No. 4 for large pedicles; No. 1 for skin and peritoneum; No. 2 chromic for fascia, cervix, the levator ani muscles and perineal fascia, No. 1 chromic for the intestines and for the buried perineal skin suture. The ligatures are always applied outside of clamps. Injury to veins by clamps

is a cause of embolism. Kangaroo tendon is not used, because some patients absorb it very quickly.

Abdominal drainage is never used in pelvic operations; culdesac drainage is employed only when there is oozing, or when pathological material is present that cannot be removed. We believe drainage causes necrosis of ureter, bladder, and bowel and that it is often followed by fistulæ and postoperative hemorrhage, if in contact with large vessels. Drainage prolongs convalescence and makes it stormy. In the Wertheim operation, with large raw surfaces in the pelvis under the peritoneum, we use a small drain just through the top of the vagina to take away the serum from these raw surfaces. In gall-bladder operations a rubber tube, sewed to the stump of the cystic duct, is the only drainage used.

The curet is used in cases of suspected carcinoma, retained placenta, or polypoid endometritis. In incomplete abortion the retained tissue is removed with sponge forceps, and the cavity is then swabbed with tincture of iodine to contract the uterus and arrest hemorrhage. The uterus is not packed except to control hemorrhage. The packing is removed after twelve hours.

The leukorrhea, in cases of diseased adnexa, will disappear more quickly if the tubes are removed and curettage is not employed. If both ovaries are removed, supravaginal amputation of the uterus is done. The uterus is of no use without the ovaries, and is liable to become adherent in the pelvis, cause backache and leukorrhea. If an ovary is saved the uterus is suspended with No. 2 chromic catgut. When this is absorbed, the uterus drops into a pelvis free from adhesion. The ovaries are not resected for small multiple cysts. If a single cyst is present on the surface of the ovary, it is resected; but if there are numerous cysts, the ovary is removed. It was found that if these ovaries were resected, they again became cystic in a short time and cause such pain as to require removal. It is better to either leave them alone or take them out. Resection of the tube is never done. If resected, they close up again, become adherent, and give rise to trouble. In large multiple fibroids, the ovaries are removed if there is much disturbance to their circulation.

In supravaginal hysterectomy, the cervical canal is not touched. If there is much oozing from the cut surface, the large vessels are ligated or sutures are applied to the edge. Care is taken not to interfere with its blood supply. For this reason the cervix is not sewed over. The stump of the round and infundibulopelvic ligaments are sewed to the cervix to support it. We never get

infection from the cervix. At times a small hematoma has formed under the peritoneum which drains through the cervical canal.

Vaginal hysterectomy is done for extreme prolapse; the broad ligaments fixed under the urethra. Vaginal fixation of the uterus, with shortening of the uterosacral ligaments is done for large cystocele, if accompanied by prolapse. Vaginal hysterectomy is sometimes done in fat women with movable uteri.

Section through the posterior vaginal culdesac may be performed for large pelvic abscesses; but in most cases the abdominal operation, through a transverse incision, is considered safer and convalescence quicker and freer from complications. Anyone who has much experience in pelvic work is convinced of this from bitter experience.

For retroversion of the uterus we recommend the Simpson-Mayo operation. The round ligaments are sewed to the under surface of the sheath of the recti muscles with No. 2 chromic catgut. The Baldy-Webster operation has resulted in a number of recurrences. In one case it happened at the end of two weeks; in another in six months. On reopening the abdomen, the ligaments were found to have pulled lose from the posterior surface of the uterus, and the small holes in the broad ligaments were filled with loose cellular tissue. As to the Gilliam operation, retroversion recurred in some cases; in others, the round ligaments were drawn through the rectus sheath, and gave so much pain, that we felt like opening the abdomen and cutting them loose. There were also two cases of postoperative obstruction of the bowels in the hospital, the intestines becoming adherent between the round ligament and the pelvic wall. Ventral suspension has been successful and without complications; but the operation was given up, because of the dystocia following these cases and of which many have been reported in the literature. Abdominal shortening of the uterosacral ligaments is done when indicated. Combining this operation with shortening of the round ligaments is rarely necessary. The appendix is always removed if the patient's condition is good.

The perineum is repaired by the flap-splitting operation, and suturing of the levator ani muscles and fascia. No. 2 buried catgut is used for muscles, fascia, and posterior vaginal wall. A subcutaneous No. 1 catgut suture is employed for the superficial muscles and skin. None of the sutures are exposed, to prevent infection. To put the parts at rest, the sphincter ani muscle is always dilated at the end of the operation. We find it seldom necessary to operate on hemorrhoids when a perineorrhaphy is performed. If the sphincter is dilated, the hemorrhoids disappear. In complete

lacerations, a flap is turned down over the rectum, the sphincter-ani, and perineal muscles sewed with buried sutures. The bowels are allowed to move as soon as they want to. The diet of the patient is not restricted.

Atropine sulphate, gr.  $\frac{1}{150}$ , followed in ten minutes by eserine salicylate, gr.  $\frac{1}{40}$ , are given while the patient is still on the table. The atropine acts more slowly than eserine, so it is given first. Atropine counteracts the depressing effects of eserine on the spinal cord, and assists the action of the eserine on the intestines. Eserine should never be given without atropine. Patients who are given atropine and eserine on the table do not have gas pains and do not suffer from distention. Only one out of four cases need morphia, if they are given atropine and eserine on the table as indicated above. It is rarely necessary to repeat the dose.

Craig found that repeated doses of eserine caused distention. It should only be repeated when indicated and the salicylate alone should be used. We have not seen a case of paralytic ileus that was not relieved by atropine and eserine. Before we learned to administer the drug properly, we were often called in the middle of the night, after all kinds of enemas had failed and have given atropine and eserine, followed by an alum enema, with relief of the ileus. Our patients are not worn out with gas pains, one reason, they want to get out of bed early. A patient who has been given atropine and eserine salicylate, on the table, has a flat abdomen the next day. If there has been much hemorrhage, tap water is given by the rectum immediately after the operation. If hemorrhage is accompanied by shock, whiskey and hot coffee are given in the enema. Morphia is given to combat shock and to relieve pain. It is the best heart stimulant we have but should not be given after twenty-four hours. If the patient has pain twenty-four hours after the operation, if due to gas, it is relieved by atropine and eserine and an alum enema. If the pain is not due to gas, it is generally relieved by a hot water bag to the abdomen and aspirin. Vomiting generally stops after a couple of large glasses of water have been given, the patient washing out her own stomach. Some cases of persistent vomiting, without apparent cause, are the result of a nervous reflex, and are relieved by spirits of chloroform, 10 drops in a teaspoonful of rhubarb and soda mixture every fifteen minutes. Even if this is vomited, a little of the spirits of chloroform is absorbed each time; this acts as a sedative, and the rhubarb and soda neutralize the acidity of the stomach. In these cases cold compresses are applied to the throat and a mustard plaster to the epigastrium.



If there is postoperative dilatation of the stomach, as shown by the vomiting of large amounts of greenish fluid, and distention of the epigastrium, the pharynx is sprayed with a 2 per cent. solution of cocaine, the patient is allowed to swallow a little of the solution; and the stomach may be washed out. After this the patient is allowed but small quantities of water, with 10 drops of lemon-juice to half an ounce, to relieve thirst. Catheterization is not allowed, unless it is impossible for the patient to pass urine voluntarily. The patient may go the first twelve hours before the catheter is used. Pituitrin, 1 c.c., is given when the bladder is full. This is followed in fifteen minutes by an enema. When the rectum is emptied, the bladder is frequently emptied at the same time. Pituitrin is frequently successful in these cases. Sterile urine will not hurt the perineum, but the catheter will hurt the bladder.

*Diet.*—It is not necessary to feed the patient unless she is hungry. As soon as awake she may be given water, or lemon and water, or tea, or soup, or buttermilk. No milk is given until after the bowels have moved as it is harder to digest than beefsteak and causes intestinal distention. Ice cream, however, is often grateful to the patient. Cereals and cream, eggs, custard, stale bread, or toast, and scraped beef may be given as soon as desired. After the bowels have moved, a full diet is given. Patients are allowed to move about at will, sit up in bed, and get out of bed into a chair. As soon as vomiting stops, tincture of nux vomica 10 drops before meals, and hydrochloric acid dilute 10 drops after meals, are given. We find the patients eat more, if these drugs are thus administered. The bowels often move on the second day, or as soon as the patient begins to eat and moves about. No cathartic is given unless indicated. If the patient feels distended and the bowels will not move, she is given an enema, and allowed to sit up. If there is a slight temperature and coated tongue, castor oil is given, if she can take it; if not, calomel, followed by a saline, may be administered.

*Early Mobility.*—The patient is permitted to move at will as soon as she awakens. From the second to the fifth day, depending on the feelings of the patient, if the temperature is below 101°F. and the pulse below 100, she is helped out of bed into a wheel chair and is allowed to sit up until tired; usually half an hour to an hour. Thereafter she may sit up longer. Just as soon as she feels able, she is allowed to walk a short distance. Patients treated in this way gain strength quickly, and, by the end of the first week, are able to walk around the ward, and are allowed to go home on the eighth or tenth day. When they go home, they are instructed not to fatigue

themselves, but to be up and down as comfort may demand. It is wonderful how quickly they gain strength. Two weeks after the operation they are walking around as if they have never seen a hospital. Our patients are told, before going to the hospital, they will be out of bed before the fifth day and able to go home by the eighth or tenth. If suppuration occurs, they are put back to bed until the temperature is normal. With the Pfannenstiel incision the wound heals quickly. There is no tension on the wound. We have never had a hernia in the transverse incision. If suppuration occurs a small opening is made, the cavity filled with enzymol, 1 part to 4 parts of water, and dressing wet with the same solution is applied. Enzymol will clean the wound in two or three days. All pus disappears in that time. Bier's cup is then used, with balsam of Peru in the wound, to stimulate the healing.

In 50 radical hysterectomy operations the patients were out of bed on the 5th day; out of the hospital on the 14th day. In 320 supra-vaginal hysterectomies, for pyosalpinx, 125; for fibroids, 172; for ovarian cysts, 17; for ectopic gestation, 6; the patients were out of bed on the 4th day; out of the hospital on the 10th day. Three hundred forty-seven salpingectomies were out of bed the 3d day; home, the 9th day. One hundred three ovariectomies were out of bed the 4th day; home, the 9th day. One hundred seventy operations for retroversion uteri were out of bed the 3d day; home, the 8th day. One hundred twenty appendectomies were out of bed the 4th day; home, the 8th day. Sixty-five herniotomies were out of bed the 5th day; home, the 12th day. Fifty gall-bladder cases were out of bed the 5th day; home, the 10th day. Forty-seven cystocele and perineal operations were out of bed the 4th day; home, the 9th day. Forty-five vaginal sections were out of bed the 4th day; home, the 10th day. Forty-nine vaginal hysterectomies were out of bed the 4th day; home, the 10th day. Fifty-five vaginal fixations for cystocele and prolapse were out of bed the 5th day; home, the 11th day. Forty-nine operations on stomach and intestines were out of bed the 4th day; home, the 12th day. Thirty kidney operations were out of bed the 5th day; home, the 10th day. Seven exploratory operations were out of bed the 4th day; home, the 10th day. Two ligation of internal iliac for cancer were out of bed the 6th day; home, the 14th day. In all 1500 operations with 24 deaths.

The 24 deaths occurred in Wertheim operation, 6; heart complications, 4; delirium tremens, 1; general peritonitis, 2; uterine fibroids, 2; acute indigestion and fatty heart, 1; acute dilatation of the heart, 1; supravaginal hysterectomy for pyosalpinx, 2; sepsis,

1; pneumonia, 1; salpingectomy, 1; hematoma sepsis, 3; cystocele, 1; peritoneal cysts, 1; intestinal obstruction, 1; tubercular peritonitis, 1; vaginal section for eclampsia, 1; retroversion, 2; cancer of the stomach, 1; kidney, 2; vaginal hysterectomy for prolapse, 1; acute diverticulitis, 1; acute appendicitis, 1; umbilical hernia, 1.

There were 53 skin infections: 1 retroversion uteri was out of bed the 4th day; home, the 20th day; 1 carcinoma of the ovaries was out of bed the 9th day; home, the 14th day; 3 hysterectomies for cancer were out of bed the 5th and 4th days; home, the 14th, 18th and 19th days respectively; 1 ligation of internal iliacs was out of bed the 7th day; home, the 14th day; 6 pyosalpinx were out of bed the 2d, 4th, 3d and 11th days; home, the 8th, 11th, 14th and 17th days; 5 appendicitis cases were out of bed the 2d, 3d, 4th, 7th, and 14th days; home, the 10th, 14th and 20th days; 4 hysterectomies for fibroids were out of bed the 3d, 5th and 15th days; home, the 10th, 13th and 24th days; 4 salpingitis were out of bed the 3d, 4th, 8th and 9th days; home, the 9th, 16th and 17th days; 6 gall-bladder cases were out of bed the 2d, 3d, 5th, 7th and 8th days; home the 8th, 10th, 14th and 21st days; 4 umbilical herniæ and lipectomies were out of bed the 4th, 8th and 14th days; home, the 9th, 17th, 23d and 24th days; 1 postoperative ventral hernia was out of bed the 16th day; home, the 21st days; 1 ulcer of the stomach was out of bed the 4th day; home, the 14th day; 1 laparotomy for infected dermoid was out of bed the 4th day; home, the 14th day; 1 laparotomy for ovarian abscess was out of bed the 10th day; home, the 12th day; 1 laparotomy for dermoid cysts was out of bed the 4th day; home, the 15th day; 1 pelvic abscess, fibroids and pyosalpinx, was out of bed the 14th day; home, the 21st day; 1 infected sinus, due to gauze swab in the fat, was out of bed the 4th day; home, the 10th day; 1 postoperative peritonitis, following salpingitis, was out of bed the 10th day; home, the 20th day; 2 vaginal hysterectomies, for prolapse, were out of bed the 7th and 12th days; home, the 14th day; 2 vaginal fixations for cystocele were out of bed the 5th and 10th days; home, the 10th and 14th days; 2 vaginal sections and perineums were out of bed the 5th and 7th days; home, the 10th and 14th days; 1 appendicitis and pelvic abscess was out of bed the 10th day; home, the 21st day; 2 cystoceles and perineums were out of bed the 5th and 7th days; home, the 11th and 14th days; 1 fecal fistula and hysterectomy for pyosalpinx was out of bed the 21st day; home, the 36th day; 20 cases of hematomata in the wound were out of bed the 3d to 12th days; home, the 18th to 27th days.

## UNCINARIASIS IN PREGNANCY.\*

BY

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LITTLE has been written on this subject in so far as I can find in a review of the recent literature. It seems but yesterday when Stiles made his first trip to the South and interested us by his demonstration of the comparative figures of the infection. It is strange that some of us interested in obstetrics should not have called the attention of the profession to the frequency, in the Southern States, of this by no means uncommon condition during pregnancy. Bass, in his work, only refers in four lines to the ill effect it has on the pregnant woman and the similar effect on the development and nutrition of the child; and in another reference warns against the use of thymol, as a dangerous drug to use before the birth of the child, but calls attention to its benefits during the puerperium.

Any one with experience can almost make a diagnosis of these cases at a glance—the pale, cadaverous, sallow individual of the chronic malarial cachectic type, or “clay eater” as they used to be termed, has hookworm stamped on the face. A microscopical examination of the stool or a washing of one through cheese cloth will certainly reveal the characteristic ova or the worm itself in large numbers. It is not until the latter months of pregnancy that the result of the toxemia caused by the presence of the parasite in the intestine with its resulting deleterious effect of toxin absorption through the wounded mucosa, is in evidence. The woman becomes more anemic, pale and listless, the conjunctivæ more pearly white, the breathing more difficult as the uterus rises higher, until it becomes a dyspnea. The lower extremities grow edematous and gradually her condition more and more alarming until finally it is evident that something must be done to relieve her desperate plight. It is here that the marked similarity of the condition to one of the toxemias of pregnancy is apparent. But there is no resemblance to acute yellow atrophy of the liver, for the condition is a slow, progressive one and the sallow cachectic appearance of the skin is unlike the icterus of yellow atrophy. There is

\* Read before the Medical Society of the State of South Carolina, June, 1917.



no nausea or vomiting or acidosis as in hyperemesis or in chronic duodenal ulcer near term, but there is every similarity to the hepatic or nephritic type of toxemia in which we find boggy edema, flashes of light before the eyes, headaches, marked anemia, sallow complexion, constipation, scanty urinary secretion, dyspnea on exertion and the various other symptoms of these disorders of pregnancy.

The differential diagnosis is easy: the peculiar sallow complexion of the "clay eater" is present; the ova are easily distinguished in the stool or the worms secured by washing the stool thoroughly. A history of living in the country and the high eosinophilia are always present. The blood pressure is low (systolic from 90 to 95), and the urine is fairly clear.

As labor comes on, unless the patient is a multipara, with a normal position, it is only a matter of a few hours before it becomes evident that one has to deal with a sluggish uterus and that assistance must be rendered.

Of all the puerperal conditions that sepsis is most apt to make its appearance in, this I think is the most likely, for there is little resistance to infection. Many of these women die in the mill and factory homes as a result of the squalor and filth and their absolute inability to resist infection.

The object of this paper is to call the attention of the profession to this type of toxemia during pregnancy, which closely resembles some of the toxemias of pregnancy itself, and to emphasize the fact that we can with perfect safety give chenopodium oil with castor oil, during the pregnant condition and secure a healthy strong mother in a reasonably short period of time without the risks of thymol. I also desire to urge the early treatment of these cases with this drug, accompanied by the intelligent use of arsenic or iron as tonics.

The following differential diagnostic table may prove of value:

	In eclampsia.	In uncinariasis.
Social condition and occupations.	A disease respecting no woman; most common in primiparæ and the illegitimately pregnant.	Chiefly seen among the poor, especially those employed in mills and factories, who live in settlements and whose earlier life can be traced to rural districts, <i>i.e.</i> , "ground itch."
Kidneys.	Low urea, albumin, casts.	When associated with edema; albumin, very few casts.
Blood pressure.	High.	Low.
Blood.	No eosinophilia, hemoglobin percentage possibly low.	Eosinophilia; 15 to 30 per cent. of whites a good prognosis, hemoglobin percentage always low and associated with dyspnea

		and cardiac palpitation when very low.
Stools.	No ova and worms.	Ova plentiful, worms also.
Heart.	Functional murmurs not the rule.	Very common.
Pigmentation.	Normal.	More marked, especially the mask of pregnancy.
Edema.	Boggy.	Boggy, but more general and more transparent, eyelids.
Babies.	Normal, if mother goes to term.	Small weazened, has little fat, premature and often die of atelectasis.

*Treatment.*—The treatment as mentioned is American worm seed, chenopodium. "Fifteen drops of the oil, two doses, one hour apart" repeated every week for three or four weeks and followed in each instance by a laxative.\* Good nourishing food and removal from poor hygienic surroundings is essential. For this reason I try to get these patients into a maternity ward early and keep them there because they undoubtedly get better food and are kept in a cleaner condition than in their own homes. The treatment can be instituted at any time during the pregnancy and the response is usually prompt. If desired after the puerperium, thymol may be given in the usual adult three doses about one hour apart preceded and followed by two ounces of magnesium sulphate and the avoidance of fats, oils or alcohol.

The following are a few cases illustrative of the above paper:

CASE I.—Mrs. H. W., white, aged twenty-three, primipara. Childhood spent in country. Practically all the diseases of childhood. Before marriage worked in a bagging mill and lived in its settlement. When eight months pregnant, her physician called me as a consultant. Urine loaded with albumin, few casts, blood pressure, systolic 96. Dyspnea marked, legs and thighs and vulva very edematous. Anemia marked, eyelids and lips bloodless. She complained of dizziness and flashes of light before her eyes. Position, transverse, L. sc. a. Advised instituting labor with Vorhees bags, which was done, resulting eventually in podalic version. The baby was very small, atelectatic and died on the fifth day. The mother took the thymol treatment, which resulted in a cure and has since been delivered of a healthy child. This case could have been treated with oil of chenopodium and resulted differently.

CASE II.—Mrs. M., white, aged twenty, primipara. Came to the city from the country six months ago. History of ground itch. History practically same as the above case except that she was not quite as anemic. I met her in the obstetrical ward when my service

\* Remember that a minim of oil of chenopodium equals almost three drops, hence the reports of toxic symptoms following its use.

began. She was almost at term and presented every external evidence of an approaching eclampsia. Chenopodium was given her but as she went into labor two days later there was not time enough for improvement. The labor was long and tedious. The uterus very sluggish, she was not able to deliver herself and as dyspnea was so severe, a medium low forceps was done. The baby was small and in poor condition. She left the hospital on the twenty-first day, after a thymol treatment and using a ferruginous tonic, in fairly good shape. The baby had improved but was under weight. I have since lost sight of her.

CASE III.—Mrs. B., white, aged thirty, six months pregnant when admitted to the ward. Symptoms and history identical with the others save that her hemic mitral blow was worse and her systolic blood pressure was 94. She was given chenopodium in capsules followed by castor oil as described in the paper and also a strychnine, digitalis and iron pill. She improved very much, blood pressure rose to 104, albumin cleared up. Hemoglobin went to 80 per cent. by the third week when she left the hospital upon her own request. Her subsequent history was a normal delivery at her own home in the mill village. The infant died during the first summer. The mother's condition still remains good.

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## THE RATIONALE OF RADIOTHERAPY IN UTERINE HEMORRHAGE.

BY

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As more and more conditions, particularly those of a gynecological nature, are found to be improved by radiotherapy and others to be unimproved or made worse, the principles underlying the action and application of this agent become more and more clarified. The most easily demonstrated effects are those on the cellular structures of the body. The tissue changes are well enough defined so that we may deduce the symptomatic result if we only be sure of the functions of the tissues concerned. Functional or secretory changes in the cell are more difficult to follow but studies on enzyme action and cell permeability in unicellular organisms seem to show that the effect is on the structure rather than on the function of the cell.

These changes are readily followed in the organs and tissues concerned with menstruation. Although of course most of the tissues of the body have at some time a relationship to menstruation, the tissues most intimately involved are those of the ovary, uterine muscle and vessels and the endometrium. There have been so few

specimens of endometrium removed after radiotherapy that a true estimate of the effect is difficult to make. My own material is limited to one specimen taken after  $x$ -ray treatment which showed only a normal membrane of the post-menstrual type. With radium however it is difficult to see how the dosage necessary to produce amenorrhea could fail to have some destructive effect on the endometrium. Much lighter doses cause severe burns on other epithelial surfaces; moreover a discharge often persists for some time after radium treatment as if from an irritated mucosa. That it is temporary is shown by the return of menstruation after a light dosage and by numerous cases of pregnancy which have occurred in women previously exposed to the rays.

The uterine muscle is particularly resistant to the rays. It is upon this that we depend for protection in giving enormous doses to carcinoma of the uterus. Direct experiment on animal uteri and on chick's heart muscle, etc. demonstrates the same resistance.

The more penetrating  $x$ -rays and the Gamma rays of radium produce an endarteritis which is often quite marked. While very definite, the change is not more particularly marked than that which is often seen in the so-called fibrotic uteri or chronic metritis, or more often in the vessels of the majority of fibromyomata.

In the ovaries on the other hand there are very distinctive changes (6). Beginning a few hours after exposure to an erythematous dose of penetrating highly filtered rays in the more fully developed Graafian follicle, there begins a breaking up of the nuclei which becomes marked in two or three days while the primordial follicles seem to be resistant and are only affected by enormous doses. At the end of about ten days the architecture of the mature follicle is almost lost. This effect is one of the most striking of all those caused by the rays on any of the structures of the body.

The symptomatic results of such changes are easily traced. The Graafian follicle ultimately develops into a corpus luteum and, whatever the mechanism, there is little doubt that the latter controls menstruation and that without a corpus luteum formation menstruation will cease(3).

If then the  $x$ -ray destroys the Graafian follicle and the follicular apparatus controls menstruation, then a proper dosage of  $x$ -ray must stop menstruation. On this conclusion rests the permanent success of radiotherapy for uterine bleeding.

Do these principles apply also to abnormal uterine bleeding? Are variations in the frequency, amount, duration and character of uterine bleeding of such degrees as to be called pathological, governed



by variations in the functional activities of the structures controlling menstruation or are they brought about by newly developing anatomical lesions in the uterine lining or walls. Anatomical lesions have been held guilty up to very recently and the following have been given as causes of uterine bleeding; chronic endometritis, fibrosis of the uterus or chronic metritis, arteriosclerosis of uterine vessels, syphilis and tuberculosis of the uterus, chronic passive congestion of local origin (displacement of uterus, tumors of uterus and of other pelvic structures) and of remote origin (heart failure, abdominal tumors, etc.); by high blood pressure, active congestion from inflammation in the uterus or adnexa and from ulcerations or congestion in fibromyomata.

It has been so definitely demonstrated that chronic endometritis is a misnomer for hyperplasia of the endometrium and that fibrosis of the uterus (chronic metritis) bears no extraordinary relationship to uterine hemorrhage that mention of it would not be made were these principles not still guiding many in their treatment of this symptom. I bring them up simply to draw attention to the gradually prevailing view as expressed in an extensive literature that the bleeding in these conditions is due to extrauterine agencies<sup>(2)(5)(7)</sup>, alterations in the menstrual mechanism, to correct which we must attack some link in the menstrual cycle, particularly destruction of either the corpus luteum or the endometrium, for, while the other organs of internal secretion may profoundly effect menstruation, all of them may be excised without any effect upon it.

While the situation is fairly clear with regard to the above conditions, the relation of uterine hemorrhage to active and passive congestion and to fibromyoma of the uterus is less so. In an attempt to estimate the importance of the various anatomical lesions in uterine hemorrhage Dr. Clifford Goodman and I are making a statistical study of several hundred cases at the Presbyterian Hospital which we hope to present formally at a later date. Thus far the only condition in our series in which passive congestion might possibly be considered a cause is retroversion. There have been one or two cases of menorrhagia which have become normal after the uterus has been put into position by a pessary. Statistically however retroversion coincides with uterine bleeding with slightly less frequency than chronic appendicitis and we have gained a preliminary impression that the coincidence merely follows the law of chances. Pyosalpinx is somewhat frequent, indicating perhaps that active congestion may indeed play a rôle. Fibromyoma as may be supposed occurs with considerable frequency. Our statistics do not

convey a true estimate of bleeding in fibromyoma, however, since practically all of them were sent for treatment of this symptom. As to the cause of the bleeding with the fibroid we have found little to offer and must refer simply to the two conflicting current ideas, the first or more popular of which ascribes the bleeding to ulceration or congestion in the fibroid or uterine vessels, while the second seeks a biochemical factor or hormone action(8). It is true that in our series hyperplasia of the endometrium has been the rule and this might lead one to think that somewhat the same agencies are at work in the bleeding of fibromyomata as in the other hyperplasias of the endometrium. It is also interesting to note that the effect of radiotherapy is precisely the same where a fibromyoma is present as where it is absent, indicating that even though congestion may have some importance it is not the essential factor in the bleeding.

Ulcerations such as in carcinoma and the erosions or pedunculated intrauterine masses like a polyp, cause bleeding as they would in any part of the body irrespective of menstruation and must be handled accordingly.

In practice these principles are directed toward two large groups, those cases of uterine bleeding which show no gross changes in the uterus and those associated with the fibromyoma of the uterus. The former type occurs most commonly at the beginning or at the end of the child-bearing period but also with some frequency at any time during the active period and includes the conditions known as chronic endometritis and metritis. The onset of the bleeding in the active child bearing period has coincided peculiarly with some more or less severe trauma to the body such as childbirth or operation, particularly those performed on the genital structures.

In the older women the whole procedure is very simple. Carcinoma is excluded by curettage; they are given a stated massive dose, may or may not have a period or two and then pass with invariable certainty into the menopause.

Occasionally the first period is profuse; why it should be so is not proven. One may infer that it is because the destruction of the corpus luteum throws endocellular substances into the blood stream which are similar to the normal secretions which excite the endometrium to activity.

With girls at the age of puberty two methods are in vogue. The first is to give a moderately large dose and to await results, the other is to give small repeated doses following each period, gauging subsequent doses by the effect on each following period. Exposures are given at the end of the period so that the effect of the primary

stimulation above mentioned may be minimized. One must for this same reason be cautious in this mode of application. The period following the first couple of exposures may be profuse. The operator, feeling that the dose is insufficient, gives a stronger one which turns out to be excessive because the profuse bleeding was not due to the action of the original causes but to the stimulation of the rays. Such a case is the only one in the following series where the patient has been utterly displeased with the result. Each individual, where a temporary menopause is desired, must have the dosage determined and it is impossible to foretell what dosage any particular individual may need. This is well illustrated by two cases of sixteen-year-old girls; one of whom was made amenorrheic for eight months by a dose of x-ray one-eighth as large as that given to the other girl with barely any appreciable effect on the bleeding.

At any time in the child-bearing period a positive result can with more or less ease be certainly obtained. I believe that the cause of the bleeding in all of them is a failure of some element in the menstrual mechanism, particularly the Graafian follicle, influenced largely by all the glands of internal secretion, especially the thyroid. In the late child-bearing period this failure indicates the beginning of the natural menopause and should be regarded as a more or less natural process. What more simple than to hasten this process in the ovary so that the discomforts and dangers of the hemorrhage be confined to one or two periods instead of being allowed to drag along for months and years? The menopause is due in a short time no matter what is done, and the women will be saved a great economic and physical loss.

In the younger girls on the other hand this lack of balance is one of deficient development coming on in the growing period when the Graafian follicle should be most perfect. Treatment of this disorder should be reconstructive rather than destructive and the application of destructive radiotherapy should be reserved for those cases where other means have failed. Eventually, no doubt, by proper endocrinological diagnostic methods and the development of actual glandular substances we may hope to restore this disturbed balance. At present, when most of such efforts are hazy and glandular substances crude we are compelled to resort to radiotherapy.

#### SUMMARY OF THE USE OF RADIOTHERAPY IN GROSSLY NORMAL UTERI.

1. Radiant energy exerts a specific destructive effect on the Graafian follicle.
2. Menstruation is dependent on and controlled by a corpus luteum formation.

3. Destruction of the Graafian follicle must cause therefore an amenorrhea.

4. The majority of abnormal uterine hemorrhages are due to disturbances in the menstrual mechanism and not to local mechanical causes, therefore these bleedings must cease in the same manner as normal menstruation, under radiotherapy.

5. Added to the effect on the corpus luteum, radium has a local cauterizing effect on the uterine cavity.

6. In women of the late child-bearing period radiotherapy is the procedure of choice.

7. In girls radiotherapy should be used as a late procedure.

8. The induction of the artificial menopause for economic reasons is possible. Whether it is justifiable or not is a matter for discussion.

#### TREATMENT OF FIBROMYOMA.

In order to properly estimate the position of radiotherapy in the treatment of hemorrhage associated with fibromyoma, it is necessary to refer to the treatment in general. This is governed by two fundamentally opposed ideas, the first of which assumes that the myoma constitutes a menace, whether giving symptoms or not, because of the possibility of sarcoma, the possible coincidence of carcinoma and because of errors in diagnosis which overlook diseases of the adnexa. The second proposes treatment of fibromyomata only when they cause symptoms, arguing that sarcoma is extremely rare and that the so-called sarcomatous changes are, in the vast majority of cases, bizarre cell pictures which do not indicate true malignancy and can be discovered in almost any myoma if searched for long enough; and that carcinoma must be treated as carcinoma *per se*, whether there be a fibroid present or not, since the hysterectomy which is designed for the fibroid is different from that which should be performed for carcinoma. No matter what the line of treatment designed for the coincident fibroid the carcinoma must be ruled out because of its frequency (5 per cent.) and, if found, appropriately treated.

Of the conditions likely to be overlooked on examination, the inflammations are indeed helped by radiotherapy. Ovarian tumors, on the other hand, should be removed and if doubt exists as to their presence an exploratory incision made.

If the diagnosis is clear and it is granted that we treat fibromyoma only for symptoms the latter may be conveniently divided into those of a mechanical nature (pressure, interference with childbirth, rapid growth and large size, say 15 cm. or over), and secondly hemorrhage.

After radiotherapy our results show that the hemorrhage is



controlled precisely as in the normal uterus, and secondly whether from uterine anemia following the artificial menopause and endoarteritis in the tumor or from questionable action on the smooth muscle cells, the tumor mass will shrink to a marked degree after several months. Since these effects are so reasonably certain, what shall be the limits of their application? In some of the more radical clinics practically no clear-cut cases of fibromyomata are operated upon; in other clinics only the exceptional, usually the inoperable case is treated by radiotherapy. The proper application of this method lies somewhere between.

The most important use of radiotherapy is to stop hemorrhage. If this be the only symptom, its cure puts the fibroid back again in the symptomless group which we agree does not require treatment. If the mechanical symptoms, pressure, etc., predominate they should be treated mechanically, *i.e.*, by proper operative procedure, maintaining, however, a much stricter standard of operative risk than obtained before radiotherapy was in vogue. Minor contraindications which were previously passed over, now require the employment of radiotherapy.

The age of the patient is important. A permanent amenorrhea is necessary to insure a permanent result and although eventually obtained, is more difficult in the younger women and is at the same time less desirable, although the discomforts of the menopause in those younger women are not as great as I had been led to believe. Young women who have temporary menopause symptoms from radiotherapy have been asked whether they would prefer to have a laparotomy performed again or to have the menopause symptoms made permanent. All have preferred the menopause. Nevertheless the ideal patient for radiotherapy is a woman of thirty-eight or over and an operation becomes more and more desirable as the age is lower. Repeated mild doses will keep a mass down to a small size but the mental strain of two or three years continued radiotherapy I believe to be more disagreeable than the discomforts following a hysterectomy.

Summing up the ideas governing radiotherapy in fibromyomata:

1. Results show that amenorrhea follows radiotherapy in fibromyoma of the uterus precisely as it does in uterine bleeding from a grossly normal uterus.

2. Following radiotherapy the mass shrinks to a marked degree, often so much as to escape the examining finger.

3. Fibromyomata should remain untreated unless they cause symptoms.

4. When the symptom to be treated is hemorrhage, radiotherapy is the treatment par excellence, because it puts the condition again in the symptomless class.

5. Since the amenorrhea should be permanent, radiotherapy is best indicated in women of thirty-eight or over and restricted more and more as the age is lower.

6. Where mechanical symptoms predominate they are best treated mechanically, *i.e.*, by operations.

#### CARCINOMA OF THE UTERUS.

While carcinoma is properly out of the scope of this paper, since the hemorrhage of carcinoma although important is of small importance compared with the other dangers of the disease, nevertheless allusion should be made to the treatment here. Eight inoperable cases have been treated in the last nine months by radium and the immediate results have been in accordance with those reported from many sources. Within five or six days after the intrauterine administration of 2400 mg.-hours of radium in carcinoma of the cervix a copious bloody, watery discharge present for eight months almost completely ceased in five days. In one case a crater measuring 5 or 8 cm. in diameter shrank in six months so as to feel about like a cervix which has been amputated, except that the consistence was much harder. In each of the cases more or less severe bleeding has been a symptom and has been completely stopped up to the present.

About the same number of inoperable carcinomata of the cervix has been treated by the Percy dull heat method. So far improvement after radium has been just as rapid and as far as this interval indicates just as complete. The hospital stay after radium application is usually about forty-eight hours while that following cauterization varies from four to six weeks, during which the patient passes through a fairly uncomfortable convalescence. So far no accidents have followed the application of radium. Two of the eight cases treated by the Percy method developed vesicovaginal fistulæ. One case treated by the Percy method recurred after six months, was heated again, recurred after a few months, was referred to the Memorial Hospital and was given radium treatment and on last examination, two years after the first radium exposure, the vagina is filled with scar tissue but no definite local or general evidence of carcinoma is present.

Bleeding from erosions and polyps has not been treated by radiotherapy by us.

Case	Age	Symptoms and physical signs			Effect of treatment on physical signs and symptoms		Treatment				Symptoms attributable to treatment		Opinion of patient
		Severity	Dur- ation		Moderate	Remote	Agent	Tech- nic	Hours consumed	Total duration	Immediate	Remote	
1	50	+++	1 yr.	Metrorrhagia. Uterus* slightly large.	Primary increase. Amenorrhea after 2 periods.	Amenorrhea persistent 1 yr. Normal size and con- tour.	X-ray	Crossfire 10 portals	30 hr. 1500 M. A. Min.	3 mo.	Fatigue after ex- posure.	Hot flushes moderate.	Pleased
2	49			Normal menstrua- tion. Fibroids 7 cm. diameter dis- covered during cholecystectomy.	Amenorrhea after 2 periods.	Persistent 1 yr.  ?	X-ray	Crossfire 10 portals	30 hr. 1500 M. A. Min.	2 mo.	Fatigue after expo- sure.	Hot flushes slight.	Pleased
3	45	++ +	2 mo. 2 yr.	Metrorrhagia Menorrhagia Very neurotic Fibroid 8 cm. diam- eter.	Amenorrhea after 1 period.	Persistent 9 mo. at 9 mo. 2 cm. diameter. Right side of normal size uterus.	X-ray	Crossfire 10 portals	30 hr. 1500 M. A. Min.	7 wk.	?	Hot flushes moderate. Neuroses continued. Mostly fears of possi- bilities.	Pleased but ap- prehen- sive.
4	44	++ ++ +	1 yr. 5 yr.	Menorrhagia Menorrhagia at rare intervals. Fibroids 18 cm. diameter.	Amenorrhea after 1 period.	Persistent 6 mo. 15 cm. 6 mo.	X-ray	Crossfire 10 portals	30 hr. 1500 M. A. Min.	7 wk.	Slight fatigue.	Hot flushes slight.	Pleased

5	40	Menorrhagia Uterus slightly en- larged.	++++	5 yr.	Amenorrhoea after 1 period.	Persistent 1 yr. Uterus normal size 6 slight ir- regularity on post sur- face.	X-ray	Crossfire 10 portals	30 hr. 1500 M. A. Min.	3 mo.	Slight fatigue.	Hot flushes slight.	Pleased
6	46	Metrorrhagia Fibroids 15 cm. diameter. Neurotic	+++	4 yr.	Amenorrhoea after 3 periods. Spotted once 12 mo. later	Persistent 2 yr. Feels like normal sized retroverted uterus, 2 yr.	X-ray	Crossfire 10 portals	30 hr. 1500 M. A. Min.	2 mo.	Slight fatigue.	Hot flushes consid.	Pleased
7	43	Menorrhagia Fibroid 8 cm. Inoperable papillary cystadenoma of ovary. Found at laparotomy.	+++	10 yr.	Amenorrhoea after 1 period.	Persistent 2 yr. Not examined. Died after 2 yr. from ex- tension of ovarian growth.	X-ray	Crossfire 10 portals	30 hr. 1500 M. A. Min.	2 mo.	?	Moderate hot flushes	Pleased
8	49	Metrorrhagia alter- nating with amen- orrhoea	+++	2 yr.	Amenorrhoea after 2 periods.	Persistent 10 mo.	X-ray	Crossfire 10 portals	30 hr. 1500 M. A. Min.	2 mo.	Slight fa- tigue "Very nervous."	Slight hot flushes.	Pleased
9	43	Metrorrhagia.	+++	5 yr.	Amenorrhoea after 2 periods.	Persistent 3 yr.	X-ray	Crossfire 10 portals	30 hr. 1500 M. A. Min.	3 mo.	Fatigue and nausea	Hot flushes. Satis- fied. Loss of libido.	Satis- fied.
10	55	Metrorrhagia Adipose Fibroids 10 cm. diameter.	++	8 yr.	Amenorrhoea after 3 periods.	Persistent 2 yr. Uterus 5 cm. diam. 2 yr.	X-ray	Crossfire 10 portals	30 hr. 1500 M. A. Min.	2 mo.	0	Hot flushes	Pleased



Case	Age	Symptoms and physical signs			Effect of treatment on physical signs and symptoms		Treatment				Symptoms attributable to treatment		Opinion of patient
			Severity	Duration	Moderate	Remote	Agent	Technic	Hours consumed	Total duration	Immediate	Remote	
11	47	Menorrhagia	++	3 yr.	Amenorrhea after 2 periods.	Persistent 18 mo.	X-ray	Crossfire 10 portals	30 hr. 1500 M. A. Min.	8 wk.	Fatigue slight.	Hot flushes moderate.	Very pleased
12	42	Menorrhagia   Fibroids 10 cm. diameter. Polycystic kidneys	+++	5 yr.	Amenorrhea after 2 periods.	Persistent 3 yr. Uterus 6 cm. diam. 2 yr.	X-ray	Crossfire 10 portals	30 hr. 1500 M. A. Min.	10 wk.	Fatigue and nausea	Hot flushes moderate. Attack of uremia 6 mo. after end of treatment.	Pleased
13	46	Menorrhagia	++	7 yr.	Amenorrhea after 1 period.	Persistent 18 mo.	X-ray	Crossfire 10 portals	16 hr. 1000 M. A. Min.	6 wk.	o	o	Very pleased
14	36	Menorrhagia	+++	1 yr.	Amenorrhea after 1 period.	Persistent 9 mo.	X-ray	Crossfire 10 portals	24 hr. 1200 M. A. Min.	5 wk.	?	Slight hot flushes.	Very pleased
15	46	Menorrhagia (occasional), Menorrhagia	+++	2 yr. 1½ yr.	Amenorrhea after 1 profuse period.	Persistent 1 yr.	X-ray	Crossfire 10 portals	30 hr. 1500 M. A. Min.	7 wk.	?	Occasional headaches.	Very pleased

16	47	Menorrhagia Metrorrhagia	+++ +++	3 yr. 1 yr.	Amenorrhea after 1 period.	Persistent 15 mo.	X-ray	Crossfire 10 portals	30 hr. 1500 M. A. Min.	8 wk.	Fatigue slight.	Occasional dizzy spells and hot flushes	Very pleased
17	45	Metrorrhagia Uterus a little ir- regular.	+++ +++	3 yr.	Continuous dribbling 2 mo. then amenorrhea.	Persistent 2½ yr.	X-ray	Crossfire 10 portals	30 hr. 1500 M. A. Min.	8 wk.	Fatigue slight.	Hot flushes	Very pleased
18	48	Menorrhagia	+++	2 yr.	Amenorrhea after 2 periods.	Persistent 18 mo.	X-ray	Crossfire 10 portals	30 hr. 1500 M. A. Min.	8 wk.	Slight fatigue.	Hot flushes	Very pleased
19	52	Metrorrhagia Menorrhagia	+++ +++	3 yr. 6 yr.	Excessive flow stop- ped after 1 mo. Occasional staining 4 mo. then 620 mgm.-hr. radium.	Persistent at 8 mo.	X-ray  Radium	Crossfire  Intra- uterine.	40 hr. 2000 M. A. Min.  620 mgm.- hr.	3 mo.  24 hr.	Fatigue  Slight nau- sea immedi- ately after G. O.	Hot flushes	Pleased
20	45	Menorrhagia Metrorrhagia Uterus slightly large	++ +	5 yr. 6 mo.	Amenorrhea after 2 periods.	Persistent 2½ yr. With shrink- age of uterus small nodule felt, right cornu.	X-ray	Crossfire	30 hr. 1500 M. A. Min.	3 mo.	Fatigue. Cystic mass in right breast grew rapidly.	Slight hot flushes.	Pleased
21	43	Metrorrhagia Menopause symp- toms.	++ +	6 mo. 6 mo.	Periods every 2 to 4 mo. for 2½ yr.		X-ray	Crossfire	8 hr. 500 M. A. Min.	1 mo.	0	Hot flushes continue unchanged.	Pleased
22	44	Menorrhagia	+++	6 mo.	Amenorrhea after 2 mo. Slight show after 6 mo.	Persistent 1½ yr.	X-ray	Crossfire	8 hr. 500 M. A. Min.	Scat- tered 2 mo.	0	Slight hot flushes.	Pleased

Case	Age	Symptoms and physical signs			Effect of treatment on physical signs and symptoms		Treatment				Symptoms attributable to treatment		Opinion of patient
			Severity	Dur- ation	Moderate	Remote	Agent	Tech- nic	Hours consumed	Total duration	Immediate	Remote	
23	42	Menorrhagia	+++	18 mo.	Amenorrhea after 3 periods.	Persistent 2 yr.	X-ray	Crossfire	30 hr. 1500 M. A. Min.	2 mo.	Some head-aches and fatigue.	Hot flushes severe.	Pleased
24	48	Menorrhagia Metrorrhagia	+++	2 yr.	Amenorrhea after 2 periods.	Persistent 1 yr.	X-ray	Crossfire	30 hr. 1500 M. A. Min.	2 mo.	Consid. prostration.	Moderate hot flushes	Pleased
25	49	Metrorrhagia	+++	6 mo.	Amenorrhea 6 mo. following $\frac{1}{2}$ dose, then metrorrhagia dosage completed. Amenorrhea after 2 more periods.	Persistent 18 mo.	X-ray	Crossfire	10 hr. 500 M. A. Min.	4 wk.	0	Moderate hot flushes	?
									20 hr. 1000 M. A. Min.	6 wk.			
26	47	Menorrhagia	+++	5 mo.	Amenorrhea after 2 periods.	Persistent 20 mo.	X-ray	Crossfire	30 hr. 1500 M. A. Min.	7 wk.	Fatigue	Consid. hot flushes	Pleased
27	51	Menorrhagia Metrorrhagia Dysmenorrhea	++ ++ +	10 yr. 1 yr. 1 yr.	Amenorrhea after 2 periods.	Persistent 2 yr. Stopped	X-ray	Crossfire	2 hr. 300 M. A. Min.	3 wk.	Fatigue	Scant hot flushes.	Pleased
28	38	Menorrhagia. Metrorrhagia 1 yr. Pregnancy 2-3 mo. c metrorrhagia. Curettage. Placenta. Bleeding recurred 3 wk. after curettage.	++ ++ +	.....	Amenorrhea after 2 periods	Persistent 2½ yr.	X-ray	Crossfire	30 hr. 1500 M. A. Min.	2½ mo.	?	Moderate hot flushes	Pleased. Bothered by flushes.

29	45	Metrorrhagia	++++	1 yr.	Amenorrhea after 2 periods.	Persistent 2½ yr.	X-ray	Crossfire	30 hr. 1500 M. A. Min.	7 wk.	Slight fatigue.	Slight hot flushes.	Pleased
30	56	Metrorrhagia	++++	1½ yr.	Amenorrhea after 1 period.	Persistent 2¼ yr.	X-ray	Crossfire	10 hr. 500 M. A. Min.	3 mo.	0	Few hot flushes.	Pleased
31	47	Menorrhagia Small submucous fibroid. Uterus slightly enlarged.	++++	2 yr.	Amenorrhea after 2 periods.	Persistent 9 mo. Uterus normal size.	X-ray	Crossfire	30 hr. 1500 M. A. Min.	8 wk.	Fatigue	Very slight hot flushes	Pleased
32	37	Normal menstruation. Uterus 15 cm. diameter. Graves disease	++	?	Amenorrhea after 2 periods.	Persistent 2 yr. Mass 8 cm. diameter. Unaffected.	X-ray	Crossfire	30 hr. 1500 M. A. Min.	7 wk.	Moderate fatigue.	Graves unchanged	Pleased
33	42	Menorrhagia Metrorrhagia Fibroid 10 cm. diameter.	++	14 mo.	Amenorrhea after 1 period.	Persistent 6 mo. Mass 7 cm. diameter 6 mo.	X-ray	Crossfire	8 hr. 400 M. A. Min.	2 mo.	0	Numerous hot flushes	Pleased
34	42	Menorrhagia Uterus slightly irregularly enlarged. Swelling of feet	++	5 mo.	Amenorrhea after 2 periods.	Persistent 3 yr. Uterus slightly reduced. Still nodular. 1 yr.	X-ray	Crossfire	30 hr. 1500 M. A. Min.	3 mo.	X-ray burn from poorly applied plates. Albumin and costs. Feet more swollen.	Moderate hot flushes	Very pleased
35	42	Menorrhagia Metrorrhagia Uterus 10 cm. diameter.	++++	2 yr. 4 mo.	Amenorrhea after 1 period, very profuse.	Persistent 9 mo. Uterus normal size and shape 9 mo.	X-ray	Crossfire	30 hr. 1500 M. A. Min.	2 mo.	Drowsiness after exposure.	Moderate hot flushes	De-lighted



Case Age	Symptoms and physical signs			Effect of treatment on physical signs and symptoms		Treatment				Symptoms attributable to treatment		Opinion of patient
	Severity	Dur- ation		Moderate	Remote	Agent	Tech- nic	Hours consumed	Total duration	Immediate	Remote	
36 44	Menorrhagia Fibroid 15 cm. diameter.	+	8 yr.	Intermittent slight flow 3 mo. then amenorrhea.	Persistent 6 mo. then slight show, then per- sistent 3 yr. Uterus 6 cm. diameter globular.	X-ray	Crossfire	30 hr. 1500 M. A. Min.	2 mo.	Some fatigue.	Severe hot flushes do not bother patient.	De- lighted.
37 45	Menorrhagia Fibroid 10 cm.	++	2 mo.	Amenorrhea after 2 periods. 9 mo. later hot flushes abrupt- ly ceased. Period 3 days, then amen- orrhea and hot flushes.	Persistent 2½ yr. Mass 7 cm. nodular.	X-ray	Crossfire	24 hr. 1000 M. A. Min.	2 mo.	?	Severe hot flushes.	Pleased
38 45	Menorrhagia Metrorrhagia Nodular fibroids 6- 8 cm. diameter.	++ ++	2 yr. 4 mo.	Amenorrhea after dribbling for 3 month.	Persistent 1 yr. Nodular uterus 4-6 cm. diameter.	X-ray	Crossfire	20 hr. 1000 M. A. Min.	2 mo.	?	Moderate hot flushes.	Pleased
39 41	Menorrhagia Metrorrhagia Uterus slightly large, irregular.	++ ++	2 yr. 2 mo.	Amenorrhea after 2 periods.	Persistent 8 mo. Uterus normal size retroverted.	X-ray	Crossfire	20 hr. 1000 M. A. Min.	6 wk.	0	Moderate hot flushes.	Pleased

40	43	Metrorrhagia 2 yr. unrelieved by myomectomy.	++	2 yr.	Amenorrhea after 2 periods.	Persistent 9 mo.	X-ray	Crossfire	20 hr. 1000 M. A. Min.	6 wk.	Slight fatigue.	Moderate hot flushes.	Pleased
41	44	Metrorrhagia Fibroid 8 cm. diameter.	++	1 yr.	Amenorrhea after 2 periods.	Persistent 8 mo.	X-ray	Crossfire	30 hr. 1500 M. A. Min.	2 mo.	?	Severe hot flushes relieved by corpus luteum.	Pleased
42	46	Metrorrhagia	++	1 yr.	Amenorrhea after 2 periods.	Persistent 2 yrs.	X-ray	Crossfire	30 hr. 1500 M. A. Min.	2 mo.	0	?	?
43	47	Menorrhagia Metrorrhagia Mentally depressed	++ +++		Amenorrhea after 2 periods. Last one prolonged.	Persistent 8 mo.	X-ray	Crossfire	30 hr. 1500 M. A. Min.	2 mo.	Very slight fatigue. Mental depression increased.	Hot flushes moderate. Mental depression much relieved. Lipido increased.	Pleased
44	46	Menorrhagia Uterus 15-18 cm. diameter.	++	2 yr.	Amenorrhea after 2 periods.	Persistent 3 yr. Mass 7 cm. diameter. Nodular, 3 yr.	X-ray	Crossfire	30 hr. 1500 M. A. Min.	2 mo.	Some fatigue.	Hot flushes consid.	Pleased
45	16	Menorrhagia and metrorrhagia. 2 curettages, left oöphorectomy. Acetone to endometrium without result.	++ +++	2 yr.	1600 M. A. Min. had no effect until acetone was put to endometrium. Regulated 6 mo. then recurred, then radiated 625 mgm.-hr.	Periods regular after one was skipped (6 mo.).	X-ray	Crossfire	30 hr. 1500 M. A. Min.	2 mo.	Fatigue	0	Still worried.
							Radium	G. & O. intra-uterine.	625 mgm.-hr.	3 days	Nausea 2 days.	0	

Case	Age	Symptoms and physical signs		Effect of treatment on physical signs and symptoms		Treatment				Symptoms attributable to treatment		Opinion of patient
		Severity	Dur- ation	Moderate	Remote	Agent	Tech- nic	Hours consumed	Total duration	Immediate	Remote	
46	24	Menorrhagia Menorrhagia Many operations on pelvic organs, with- out result.	++ ++ ++ 4 yr. 4 mo.	After 1 period was regular every 28 days for 3 mo.	No further observa- tions.	X-ray	Crossfire	180 M. A. Min.	3 mo.	?	No change in severe neuroses present be- fore treat- ment was undertaken	?
47	25	Menorrhagia of dur- ation (8 days). Curettagc without effect.	++ 4 mo.	After 1 period dura- tion became 5 days. Amount less.	Report by mail that she was per- fectly well. No details.	X-ray	Crossfire	400 M. A. Min.	10 days	Fatigue	?	?
48	17	Metrorrhagia ever since puberty. Curettagc without effect.	+++ 2 yr.	Continuous slight bleeding 6 wk. then amenorrhea.	Amenorrhea persisted 9 mo. then 1 profuse per- iod, then regular 6 mo.	X-ray	Crossfire	1000 M. A. Min.	2 mo.	Slight fatigue.	Hot flushes while amenor- rhea stop- ped 5 on- set of men- struation.	Pleased
49	25	Periods of 8-10 wk. duration 2-3 wk. curettagc. Ventro- suspension without effect.	+++ 12 yr.	First period after beginning treat- ment profuse then every 4-5 wk., du- ration 4-8 days.	Continued so for 1 year.	X-ray	Crossfire	1300 M. A. Min.	6 mo.	Slight fatigue.	0 Ant. pitui- tary lobe adminis- tered along with x-ray	Pleased

50	22	Menorrhagia Curette. Ventro- suspension without effect.	+++		Periods profuse 3 mo., then amenor- rhea.	Persistent 9 mo.	X-ray	Crossfire	1500 M. A. Min.	3 mo.	Some fatigue.	Hot flushes Ant. pitui- tary lobe orrhea adminis- tered.	Pleased
51	27	Menorrhagia Metrorrhagia	++	3 mo.	Practically no effect 4 mo. after begin- ning x-ray treat- ment.	0	X-ray	Crossfire	1250 M. A. Min.	2 mo.	Consid. fatigue.	0	
52	15	Metrorrhagia	+++	9 mo.	Amenorrhoea im- mediately.	Persistent 4 mo.	X-ray	Crossfire	?	?		Hot flushes severe.	Pleased
					After 300 M. A. Min. Regular peri- ods for 4 mo. then hemorrhage, then 400 M. A. Min., then regular periods.	Regular peri- ods 4 mo., then amen- orrhea per- sisting 3 mo.	X-ray	Crossfire	700 M. A. Min.	6 mo. scat- tered.	0	0	Worried about amen- orrhea.
53	37	Menorrhagia Oophorectomy left	+++	2½ yr.	Periods regular for 3 mo. then return to former condi- tion.		X-ray	Crossfire	150 M. A. Min.		0	0 Dosage trivial.	?
54	35	Menorrhagia Uterus slightly en- larged symmetrical. Fibroid?	+++	8 mo.	Following 1st 500 M. A. Min., 6 reg- ular periods, then menorrhagia, then 650 M. A. Min., then amenorrhoea.	Amenorrhoea persistent 2 mo. (not followed further).	X-ray	Crossfire	500 650 1150 M. A. Min.		0	0	Pleased



Case	Age	Symptoms and physical signs		Effect of treatment on physical signs and symptoms		Treatment				Symptoms attributable to treatment		Opinion of patient	
		Severity	Dur- ation	Moderate	Remote	Agent	Tech- nic	Hours consumed Dosage	Total duration	Immediate	Remote		
55	33	Menorrhagia Metrorrhagia Hemophilia??  Fibroid 10 cm. diameter.	++ +++ ?	10 yr. 1 yr. ?	Following 1500 M. A. Min. had 7 short periods in a year then menor- rhagia. Amenor- rhea after 1500 further.  Mass un- changed at 1 yr.	Persistent 2 yr.	X-ray	Crossfire	1500 1500 — 3000	1 yr. scat- tered	Slight fatigue.	Hot flushes	Pleased
56	34	Metrorrhagia	+++	1 yr.	Amenorrhea after 2 periods.	Persistent 2 yr.	X-ray	Crossfire	1000 M. A. Min.		Consid. fatigue.	Moderate hot flushes	Dis- pleased at idea of ster- ility. Other- wise pleased
57	42	Menorrhagia begin- ning 9 mo. after myomectomy and plastic.	++	3 mo.	Amenorrhea immediately.	Persistent 3 mo.	Radium	1250 mgm.-hr. Intra- uterine. G. & O.	3 days	3 days	Severe headache 12 hr.	Moderate hot flushes	Pleased
58	43	Menorrhagia Small fibroid?	+++	3 mo.	Amenorrhea after 2 periods. Drib- bling between.	Persistence 4 mo.	Radium	Intra- uterine. G. & O.	625 mgm.-hr.	7 days	Some nausea and vomiting.	Hot flushes consid.	Pleased

59	46	Menorrhagia Small fibroids	+++	3 mo.	Amenorrhea im- mediately.	Persistent 4 mo. Uterus not changed.	Radium	Intra- uterine. G. & O.	625 mgm.-hr.	48 hr.	0	Consid. hot flushes.	Pleased
60	43	Menorrhagia begin- ning immediately after myomectomy.	++	4 yr.	Amenorrhea after 2 scant periods.	Persistent 4 mo.	Radium	Intra- uterine. G. & O.	1250 mgm.-hr.	3 days	Nausea for 3 hr.	Hot flushes moderate. Some whit- ish vaginal discharge.	Pleased
61	50	Menorrhagia Fibroid 15 cm. diameter.	+	1 yr.	Amenorrhea after 2 periods.	Persistent 4 mo. Mass 13 cm. at 4 mo.	Radium	Intra- uterine. G. & O.	625 mgm.-hr.	3 days	0	Moderate hot flushes	Pleased
62	52	Metrorrhagia	++	9 mo.	Amenorrhea after 1 period	Persistent 7 mo.	Radium	"	1250 mgm.-hr.	3 days	0	"	
63	45	Menorrhagia Uterus slightly large			Amenorrhea im- mediately.	Persistent 4 mo.	Radium	G. E.	1250 mgm.-hr.	7 days		0	Pleased
64	50	Menorrhagia	++	1 yr.	Amenorrhea after 2 periods	Persistent 7 mo.	Radium	"	1250 mgm.-hr.	7 days			
65	44	Metrorrhagia Small polyp	++	9 mo.	Amenorrhea im- mediately.	Persistent 4 mo. Uterus ap- parently normal.	Radium	Intra- uterine. G. & O. Polyp excised.	625 mgm.-hr.	4 days	Some post- operative prostra- tion.	0	Pleased
66	31	Menorrhagia	+++	2 yr.	Dribbling for 6 wk. then amenorrhea.	Persists 4 mo.	Radium	Intra- uterine. G. & O.	625 mgm.-hr.	2 days	0	Neurotic symptoms less. Hot flushes consid. but not trouble- some.	

## TABULATIONS OF RESULTS.

The above tabulations represent forty-four cases in women of thirty-eight or over treated by *x*-ray; eight cases in women under twenty-five treated by *x*-ray; four cases in women of from thirty to thirty-five treated by *x*-ray.

There are nine cases in women over thirty-eight treated by radium; one case in a woman of thirty-one treated by radium. Among women of thirty-eight or over there are twenty-two cases of fibromyoma. Among women between thirty and thirty-five, two cases of fibromyoma.

The results are tabulated according to the immediate or remote effects upon the uterine bleeding, on the changes of the physical signs following the treatment, and the secondary effects of the radiotherapy immediately following the treatments or coming on at a distant date.

In the women of thirty-eight or over treated by *x*-ray, menstruation ceased after no further bleeding in one case, after one period in twelve cases, after two periods in twenty-one cases, after three periods in three cases, after intermittent dribbling lasting for several weeks in three cases. In one obese subject scant menstruation with coincident hot flushes continued for four months after *x*-ray treatment was begun and was stopped completely by an application of radium. In one case, after a small dosage, bleeding returned after a few months and ceased after further *x*-ray treatment. One woman has continued for two years to have periods every few months after a small dose of *x*-ray. One case had a period several months after the original *x*-ray dose but none since.

The uterine bleeding in eight girls has been controlled with varying success in all cases. In three of them something approaching a regular menstrual period was accomplished. In the other five varying periods of amenorrhea were induced; one, to judge by the severity of the hot flushes, will be persistent for a long time, having covered nine months up to the present.

In women at the height of the child-bearing period, one had a small dosage with scant periods for a few months and then a return to the previous condition.

One woman is permanently amenorrheic after a moderate dose.

One woman with fibroid is amenorrheic after receiving a massive dose twice with an interval of a year, having during the year seven periods during which the size of her uterus remained the same.

One woman had regular periods following a moderate dose, then

because of excessive flow was again exposed and was persistently amenorrheic.

The results of the cases treated by radium are too recent to be suitable for summarizing. In general, amenorrhea occurs after one period. The profuse first period following *x-ray* has only a mild counterpart after radium installation. Menopause ensues with the same regularity as with *x-ray*.

#### LATE RESULTS ON THE SIZE OF TUMOR MASS.

##### *Fibroids forming with fundus a mass up to 7 cm. in size.*

At the end of 8 months 1 case uterus has nodular contour, normal size.

At the end of 9 months 1 case uterus has normal contour, normal size.

At the end of 1 year 1 case uterus has normal contour, normal size.

##### *Fibroids measuring from 7 to 10 cm. diameter.*

At the end of 6 months 1 case measured 6 cm. diameter globular contour.

At the end of 8 months 1 case measured 6 cm. diameter nodular contour.

At the end of 1 year 1 case measured 6 cm. diameter nodular contour.

At the end of 1 year 1 case measured 6 cm. diameter nodular contour.

At the end of 3 years 1 case measured 4 cm. diameter nodular contour.

##### *Fibroids measuring from 10 to 15 cm. diameter.*

At the end of 9 months 1 case measured 6 cm. diameter globular contour.

At the end of 2 years 2 cases measured 6 cm. diameter normal contour.

At the end of 2 years 1 case measured 8 cm. diameter globular contour.

At the end of 3 years 1 case measured 5 cm. diameter globular contour.

##### *Fibroids measuring 18 cm. in diameter.*

At the end of 6 months 1 case measured 15 cm. diameter lobulated.

At the end of 2 years 1 case measured 6 cm. diameter nodular.

Measurements made by a modified pelvimeter. The thickness of the abdominal wall was estimated and deducted. This constant deduction was made at each examination.

The secondary results of *x-ray* treatment have practically simulated the normal menopause. There have been a few gains in weight but no adiposis. The only characteristic symptom of the menopause has been the onset of hot flushes; this has been serious in one case, absent in two cases, moderate in the rest of the women of thirty-eight or over, and severe in one young woman, absent in four, moderate in the rest. One woman showed albumin and casts in the urine, which was examined because of slight puffiness over the tibiae, one woman with a double polycystic kidney had an uremic convulsion six months after the treatment had ceased. Whether it was due to the treatment or not it is difficult to say. Unfortunately routine urinary examinations have not been made on these cases; no doubt minor urinary changes would be more often discovered. Dangers of *x-ray* dermatitis are so remote with modern technic that they



need little discussion. The very first case treated had a small burn caused by the shifting of some poorly applied lead plates. Occasionally a slight erythema has appeared after heavy dosage.

Comparing the  $x$ -ray and radium it may be said that radium is preferable in practically all cases except younger women in whom small repeated doses may be desired. While the actual amount of time consumed in the treatment is about the same in both, that devoted to  $x$ -ray is spread over from six to ten weeks, while the radium is finished in twenty-four hours. Usually a whiff of nitrous oxide has to be given for the insertion of the radium. Since practically all of the older women should be curetted to exclude carcinoma both procedures are carried out at the same time.

In conclusion it may be said that uterine hemorrhage from almost any cause may be stopped by the intrauterine application of radium and that the hemorrhage from disturbed menstruation with or without fibromyoma may be controlled by the  $x$ -ray. Also practically all fibromyomata will shrink to a satisfactory degree after radiotherapy.

Practically no harm results from radiotherapy in these cases.

All cases of hemorrhage from a grossly normal uterus in women of thirty-eight or over should be treated by radiotherapy after carcinoma has been ruled out. In younger women radiotherapy should be used as a late resort. In cases of uterine hemorrhage associated with fibromyoma of the uterus, radiotherapy is the proper treatment, if symptoms from mechanical causes are absent and the woman is thirty-eight or over.

50 EAST SIXTY-THIRD STREET.

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## LARGE PEDUNCULATED CAVERNOUS ANGIOMA OF THE LIVER REACHING DOWN INTO THE PELVIS AND CAUSING OBSTETRIC DIFFICULTY.\*

BY

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(With one illustration.)

ANGIOMATA of the liver are commonly of small size and seldom cause serious symptoms, except hemorrhage, which require surgical intervention. Very rarely a cavernous angioma of the liver attains the size of a man's head. When not occasioning other symptoms, such large-sized tumor usually makes itself manifest to the patient as an abdominal mass, or it is detected during a physical examination. The correct diagnosis is often established by laparotomy.

The cavernous angioma of the liver which I have recently removed was unique both from the point of view of its large size and the serious difficulty it caused during pregnancy.

The patient was admitted to the second gynecological service of Mount Sinai Hospital, July 10, 1916 presumably for a large ovarian tumor. She gave the following history: She is thirty-three years old, menstruated at fifteen years, was married at sixteen years and had thirteen children. The oldest child is sixteen years old, the youngest fifteen months old. Four of the nine pregnancies were twins which were born respectively fifteen years, thirteen years, eleven years and nine years ago. Her last pregnancy was terminated at seven months by Drs. W. F. Faison and A. C. Forman at the Bayonne Hospital. Her abdomen had become so large, it was deemed the child could not be born *per viam naturalis*. This was seven weeks before her admission to the Mount Sinai Hospital. This last child lived four hours.

The patient had noticed the tumor mass shortly after the birth of her youngest child. It had appeared on the right side and in the upper part of the abdomen. While this tumor mass became gradually larger it caused no other symptoms for which she might seek medical advice. Only after she again became pregnant did she have a sense of markedly increased abdominal weight and it seemed to her that she was even larger than on previous occasions when she was carrying twins. Indeed her physician considered that she was pregnant with twins. Occasional severe lancinating pains in the

\* From the second gynecological service of the Mount Sinai Hospital; Dr. H. N. Vineberg, Attending Gynecologist. Patient presented at the clinical conference of the Hospital, Thursday October 26, 1916.

right hypochondrium gave the impression that she may have gallstones. She then became very heavy and could not move from side to side. The fetal motions were pronounced. Two weeks following her induced labor she began to have lancinating pains in the right side of the abdomen and radiating into the pelvis. This pain has continued till her admission to the hospital.

On physical examination the patient was in good general health. Both lower extremities showed varicose veins, the left especially. Her abdomen was irregular in contour, being more prominent on the right side. The abdominal wall was lax and tympanitic to percussion. A tumor mass was palpable from a level three fingers above the

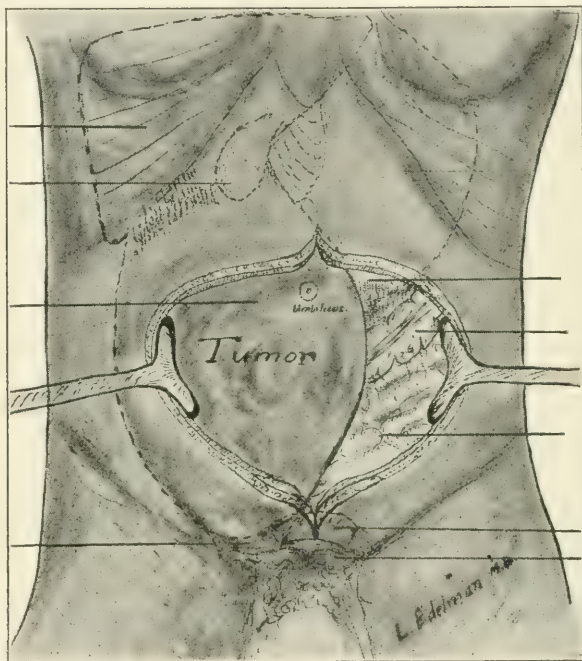


FIG. 1.—Cavernous angioma of the liver.

umbilicus and found to occupy the greater part of the abdomen. It was very firm in consistence, had a smooth surface, was somewhat tender and moderately movable. It appeared to extend to a higher level in the right hypochondrium. No free fluid could be made out. Per vaginam the uterus was found in retroposition and appeared flattened out. There was bilateral laceration of cervix with gaping external os and slight erosion. The sound entered 4 inches in a backward direction. The mass palpated by the external hand is easily palpated per vaginam.

From the preoperative examination the diagnosis of a large ovarian tumor appeared the most warranted. Accordingly I made

my incision entirely below the umbilicus extending it slightly above, to accommodate the delivery of the tumor. This to my surprise was bluish in appearance, firm, with smooth surface which was adherent broadly by fine adhesions to the anterior abdominal wall. The stomach was seen to dip down into the pelvis, being pushed down by the tumor which it became obvious sprang from some other organ than the ovary. It was soon traced upward to the liver to which it appeared connected by a thick pedicle. The liver was thoroughly inspected as it appeared smaller than the tumor mass and it was necessary to make certain that we were not dealing with a dislocated, partly constricted liver (see Fig. 1). The pedicle was almost as thick as the closed fist, its left edge being flanked by the gall-bladder. The uterus and adnexa were found to be free. The pedicle was secured by an interrupted series of No. 3 plain catgut hemostatic sutures, the largest vessels were at the sides invested by strong peritoneal folds which were easily ligated and divided. The pedicle was cut across without any bleeding taking place. There was not sufficient peritoneum to cover over the stump necessitating its fixation to the parietal peritoneum by several catgut sutures, gauze packing and rubber drainage. The abdomen was closed in layers.

The specimen removed was ovoid in shape, measured 24 by 16 by 4 inches (its anteroposterior diameter) and weighed 4 pounds and 12 ounces. Its surface was smooth. On section it resembled liver tissue with peculiar myxomatous changes. There were several circumscribed areas about the size of a silver half dollar which were pale and homogeneous in color and suggested possible malignant changes; these however proved on microscopical examination to be fibroid changes while the great mass of the tumor proved to be a cavernous angioma. I am indebted to Dr. F. Mandelbaum, pathologist to the Mount Sinai Hospital for the histological examination.

The postoperative course was uneventful, the wound healed by primary union and the small stump of the pedicle which was at first palpable soon disappeared.

#### SUMMARY AND COMMENT.

The rapid growth of a tumor of the liver occurring in a young woman who had already borne thirteen children, eight of whom were of twin pregnancies. During her last gestation her abdomen had increased so markedly in size that she considered herself again pregnant with twins. The abnormally large size of the abdomen with increasing sense of discomfort and then pain led to an induction of premature labor. The presence of the abdominal tumor then became obvious. That and pain made the patient apply for relief. The diagnosis of ovarian tumor was made chiefly because of its location in the abdomen and the palpatory findings on bimanual examination. On laparotomy it proved to be a giant-sized pedunculated cavernous angioma of the liver. It was easily removed without hemorrhage. Recovery was complete and uneventful.

The following may be regarded as a differential point in the



diagnosis: If we had paid sufficient attention to the percussion signs, namely, dullness in the right hypochondrium continuous with liver dullness we might have ascribed the origin of the tumor correctly to the liver and not to the ovary. However, the great rarity of tumors of this variety and the greater frequency of ovarian tumors complicating pregnancy would favor the latter as the most probable diagnosis. Apparently laparotomy alone can establish the diagnosis in this as in many other instances of large abdominal tumors.

261 CENTRAL PARK WEST.

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## COMPLETE PELVIC OBSTRUCTION DUE TO FIBROMYOMATA AS A CAUSE OF PUERPERAL PSYCHOSES.\*

BY

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(With one illustration.)

THE physical changes which take place in the maternal organism as a result of pregnancy are so marked and so progressive that they become apparent sooner or later to the most casual observer. Coincident with these physical changes there also occur psychical changes no less real in character, nor less pronounced in degree, but which, in the absence of a psychometer, cannot be measured and recorded. It is probable that the mental state in all women varies to a greater or less degree. It is only when such mental aberrations become so marked as to be objective in character that they are really recognized. They vary from slight changes in disposition to actual insanity, though fortunately the latter is a relatively rare occurrence.

The insanity of pregnancy may range from the symptoms of pronounced melancholia to those of a true mania. As in the other insanities there is undoubtedly a definite etiological factor. This is clearly recognized as being due in whole or in part to a syphilitic infection in certain cases of paresis, but that this is the only cause is certainly not the case. The mental distress accompanying the conception and advent of an illegitimate child oftentimes is a potent factor, and likewise within the present war zone, rape has produced numerous instances of insanity. The toxemia of pregnancy included under the designation of eclampsia has long been known as an active factor and stress has been laid at times by various authorities upon the rôle played by an infection from other microorganisms. It is possible that the *Bacillus abortus* of Bang may ultimately be shown to play a part in the etiology of this class of cases; it is certain that the

\* Read at a meeting of the Society of the Alumni of the Sloane Hospital for Women, October 26, 1917.

staphylococcus and the streptococcus of various types have much to do with the causation of many forms of the puerperal psychoses. Lusk, whose conservative opinions are well-known, is disposed to take the view that septic infection is more likely to take place when bacteria are introduced from outside the body and suggests that the toxemia due to the *Bacterium coli* is often at fault. Allan McLane Hamilton made a number of investigations as to the origin of insanity which is due to the absorption of the products of intestinal putrefaction. These studies led him to believe that the cause of many cases of puerperal derangement is to be found in the large intestine and that the characteristic acute symptoms may be

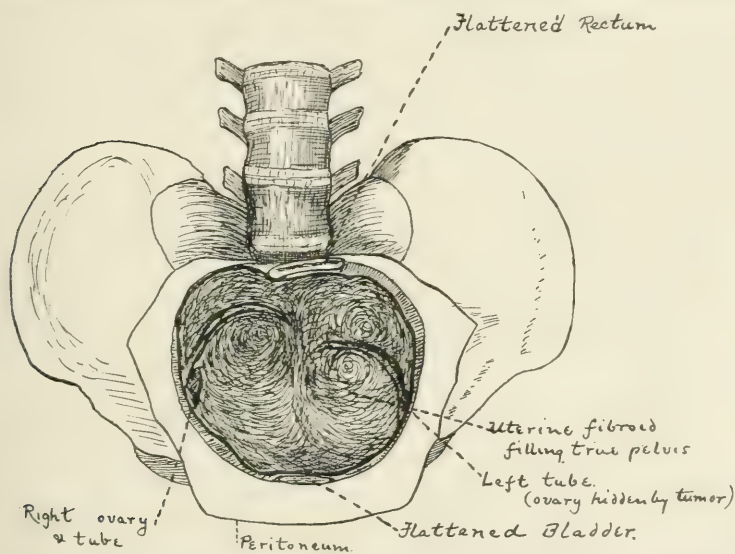


FIG. 1.—Diagrammatic representation showing uterine fibroid impacted in the pelvis.

traced to the excessive formation of the combined sulphates and are accompanied by a large amount of indican in the urine. Whether the initial cause be exhaustion or mental worry the disordered metabolism of proteids is a possible consequence. It seems to be well-established by the investigations of many writers that the absorption of the products of bacterial death result not only in diminished hemoglobin, but in various alterations in the number and structure of the corpuscles themselves. As familiar exciting causes may be mentioned stoppage of the lochia and consequent retention of septic material due to imperfect drainage of an infected uterus, subsequent inflammation of the uterus itself and the various acci-

dents of the puerperal state, exhaustion after a protracted labor, an extensive rupture of the perineum, the suffering incident to the use of instruments, and the formation of abscesses of the breast. With the increase of knowledge relative to obstetric operations, and to a thorough use of prophylactic measures during pregnancy and at the time of labor, most of these causes have been reduced in frequency.

*Frequency.*—In 8 to 10 per cent. of all insane women, the condition developed during the child-bearing process. Some statistics state that at least one woman out of every 400 confined becomes insane. The personal experience of the writer, leads him to consider this proportion of mental disturbance as unduly high. In something over 2500 personal observations the writer has seen but three well-marked cases of puerperal insanity. One of these tending toward the maniacal type developed immediately after the birth of the child. Another, a mild form of melancholia developed at the seventh month of pregnancy (Case I). The third, an ambulance case, was wildly maniacal when first seen, and died within an hour or two at the full term of pregnancy (Case II). In another woman whose two-day old child suddenly died of "thymus death," the mental disturbance while profound, lasted but a day or two, and was directly attributable to the recent shock of her delivery combined with the grief at her sudden loss. Since this condition lasted but a day or two it cannot with propriety be included in the class of cases that we are now considering.

The disease is most frequent within the first two weeks of the puerperium. Next in frequency is the period of lactation, during which insanity may appear at any time, although it is usually manifested toward the latter half. This form of insanity is more common in multiparæ. The insanity of pregnancy, the least frequent of all, usually begins after the fourth month and is about of equal frequency in multiparæ and in primiparæ. It is not the intention of the writer to discuss at length the various phases of the puerperal psychoses. He wishes, however, to present the histories of two cases due to a definite mechanical cause, a myofibroma of the uterus leading to a complete obstruction of the pelvis and a consequent intestinal stasis. This, in turn, as a result of the absorbed toxins from the intestinal tract, caused in the first case the symptoms of a pronounced melancholia and in the second instance led to conditions of acute and violent mania.

*CASE I.*—*Puerperal Psychosis (Melancholia) due to Complete Pelvic Obstruction Caused by Fibromyoma of Uterus. Delivery; Recovery.*—Mrs. C. W. F., age 40, American, was first seen December 12, 1902,

in consultation with Dr. Thomas B. Spence, who had been called in an hour or two before by the patient's husband, who was a physician. Her general health had been excellent until 1896, when she had a severe attack of peritonitis developing soon after her marriage. The pain was chiefly in her right side and the infection probably originated in the right Fallopian tube. This attack subsided without operation. In 1898 another attack occurred, similar in character to the first. A pelvic examination at that time revealed a small fibroma in the left half of the uterus.

She was of unusually fine physique and ordinarily weighed 180 pounds. At the time when seen she weighed 220 pounds. This enormous increase in weight had taken place during the past six months. Her last menstruation began as usual on the 18th of July; her probable date of confinement would therefore be the 25th of April, 1903, but because of the great increase in size her husband felt that her pregnancy was already at full term. Whether or not she had "felt life" could not be determined with certainty. For the past week or two her bowels had moved with steadily increasing difficulty and for the previous forty-eight hours no fecal matter had been expelled. Coincident with this sluggishness of the bowels she had become more and more depressed mentally and had a low-grade of jaundice with a certain amount of general edema. Both legs were swollen and edematous, the left one more marked than the right. She complained of a sense of extreme and continuous pressure in her pelvis and an inability to walk freely. Her sister, who lived with her and was a trained nurse, had noted that the patient's mental condition tended more and more to melancholia. The patient herself was quite indifferent to her surroundings, fully expected to die and did not care whether she did or not. During the previous forty-eight hours this mental depression had been greatly accentuated.

At six o'clock in the evening while attempting unsuccessfully to have a movement of the bowels, she stated that a considerable quantity of water was suddenly discharged from the vagina.

An abdominal examination showed a large mass uniform in outline reaching to the ensiform and except for its rather unusual hardness, appeared to be a full-term uterus.

Vaginal examination showed a long and narrow vagina with a cervix high up and to the right. With much difficulty two finger tips were passed into the cervix, and the head of a fetus was found to be presenting. The husband decided that nothing further should be done for the present, and the patient was put to bed.

On the following day complete obstruction of the bowels still persisted, no uterine pains at all had occurred and the patient's mental condition was more and more depressed. Further delay seemed inadvisable and ether as an anesthetic was administered by the patient's husband. The vulva and vagina were slowly but steadily dilated, until the cervix could be reached. Traction on the presenting head caused the entire arm to pull away and it was found to be that of a dead and badly macerated five months' fetus.



Eventually, by continued efforts the child was delivered piecemeal, all parts being badly macerated and almost black. The placenta was reached with still greater difficulty and it was not until the patient had been under an anesthetic for over an hour and a half that I was finally able to completely empty the uterus. The uterine canal deviated sharply to the right about 3 inches above the external os uteri. The pelvis was almost blocked by the mass which proved to be an enormous fibroid tumor extending from the brim of the pelvis to the ensiform, and apparently involving the left half of the uterus. The pressure on the left side was so great that the rectum and lower portion of the colon were compressed against the brim of the pelvis and thus gave rise to the intestinal obstruction. The manipulation of the tumor through the vagina, and the great force necessary to empty the distorted uterine canal pushed the mass cephalad and an enema was given. A considerable quantity of fecal matter was washed away. Epsom salts were administered in teaspoonful doses every hour. After six or eight doses had been taken the bowels began to move. A tight abdominal bandage encircling the lower abdomen was so adjusted as to press the tumor cephalad and relieve the pressure at the pelvic brim.

The convalescence of this patient was slow but fairly favorable. The pulse varied widely in range because of the nervous condition. The bowels were kept open by the use of Epsom salts daily and at the end of ten days the abdomen had materially decreased in size and the patient's mental condition had markedly improved. For the first week there was considerable pain over the right Fallopian tube, the site of the former peritoneal inflammation. Ice packs and an ice coil were used continuously during this time, which controlled the pain, though morphine was used occasionally. From time to time during the first forty-eight hours, contraction of the tumor mass caused sensations simulating labor pains. On the fifth day after labor the patient began to have severe pain in the calf of the left leg and the swelling which had been moderate up to that time became more pronounced. A well-marked phlegmasia alba dolens developed.

In the hope that mammary extract might be of some help in diminishing the size of the fibroma this was administered together with thyroid extract, 5 grains of each four times a day. This was slowly increased until 40 grains of each were given daily. The tumor slowly decreased in size and the patient ultimately made a good convalescence, though going up and down stairs was difficult during the second month after her confinement.

The mental symptoms progressively improved with the increased activity of the bowels. The removal of the products of conception allowed the uterine tumor to be tilted to the patient's right, and a suitable adjustment of abdominal support relieved in a measure the pressure upon the rectum. With the aid of cathartics and enemata the patient's bowels were kept active and her diet was, for weeks, a restricted one. Her excess of adipose tissue was slowly oxidized. At the end of a month her mental disturbance had entirely disappeared.

That her condition of melancholia was due to transient causes, in this case undoubtedly a form of autointoxication largely intestinal but possibly partly due to the absorption from the uterine contents, was well shown in the early summer of the following year. While seated on the veranda of a hotel at a seaside resort her husband, who was in the water bathing but a short distance from her, was suddenly seized with cramps and drowned before her very eyes. The attempts at rescue, the efforts at resuscitation after the body had been recovered, and the many incidents of grief and unpleasant notoriety always associated with such an accident, in no way disturbed her mental equilibrium. No pregnancy occurred subsequent to the one described. When seen several years later she was in excellent health and the tumor mass had so diminished in size and was so steadily diminishing, that an hysterectomy did not seem advisable.

CASE II.—*Puerperal Psychosis (Mania) due to Complete Pelvic Obstruction Caused by Fibromyoma of Uterus. Undelivered; Death.*—Mrs. A. V., an Italian woman, thirty-eight years of age, was brought to the Methodist Episcopal Hospital of Brooklyn in the ambulance. She was suffering from an acute mania of a violent type which had developed during the night, the cause for which was quite obscure. Her abdomen was enormously distended and both legs were equally swollen and edematous. An extreme degree of jaundice was also present. Her bowels had not moved for some days previous to her admission, though the remainder of her history was unobtainable.

An abdominal examination showed little because of the distention, but a large tumor mass could be vaguely palpated extending nearly to the ensiform. There was no history of pregnancy and a diagnosis of intestinal obstruction was made.

A vaginal examination showed that the pelvis was filled with a large hard mass, evidently a uterine fibroid firmly fixed in the pelvis and completely blocking the exits from both bowel and vagina. This was diagnosed as the cause of the intestinal obstruction. She was evidently *in extremis*, and no operation was attempted. During the few hours that she lived after her admission to the hospital her mental condition was one of alternating stupor and wild delirium.

After her death an autopsy was performed by the writer, and the diagnosis of an enormous fibroid completely blocking the pelvis was confirmed. In addition to this she was pregnant. The fetus was about eight months old, had evidently been dead for some time, and a moderate degree of maceration had begun.

The entire intestinal tract was enormously distended, the large intestine being five inches in diameter and filled with very offensive fecal contents. The small intestine was distended with similar contents, partly digested. The stomach was flattened against the diaphragm and was nearly empty. The gall-bladder was distended with bile, but so compressed by upward pressure that the dark and semifluid bile could be expressed through the bile duct with great difficulty.

In this case, too, the autotoxemia, largely from intestinal absorption and partly from uterine absorption, were the exciting causes of the mania.

Uterine fibromata are of course an extremely variable type of neoplasm. It is a matter of general observation that women suffering from this disease are relatively sterile. Myomata were observed by Schauta and Pinard in fifty-four and eighty-four out of 5,534 and 13,915 consecutive cases of labor respectively; 25 per cent. of Schauta's patients were over thirty years of age when pregnancy first occurred. Not only is the presence of the tumor an obstacle to conception, but it is a serious complication of labor when the condition of pregnancy coexists. As pregnancy advances the tumors usually increase in size, partly from actual growth, and more as a result of disturbances of circulation and resulting edema. Owing to the not infrequent occurrence of hemorrhages when, during pregnancy, myomata coexists, the diagnosis of pregnancy and myomata is not always easy. The location of the tumor often exerts a deleterious influence upon the position of the child. According to Olshausen only 53 per cent. of vertex presentations occur as compared with 29 per cent. of breech presentations and 19 per cent. of transverse presentations. The presence of the tumor predisposes toward malposition of the placenta and to placenta previa. Postpartum hemorrhages also are favored by their presence.

Complete obstruction of the birth-canal by such growths does not appear to be common. The two cases just reported may therefore be of interest as indicating still another complication which this type of tumor may cause in connection with pregnancy and labor.

59 WEST FIFTY-FOURTH STREET.

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## PATHOLOGY AND SURGICAL TREATMENT OF GONORRHEAL INFECTION OF THE FEMALE GENERATIVE ORGANS.\*

BY

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IT is well to resurrect this subject as it has been dead for over a quarter of a century and like most dead things has not improved with age. Indeed, even more is it necessary for us to resume an

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interest in this subject as there has been a positive retrogression in the surgical treatment of the subject.

Over a quarter of a century ago, Tait, Price and others established the pathology and surgical treatment of this condition and there has been no addition of a helpful nature since, therefore it is the lack of progress which I mean to combat.

I will briefly review the pathology of the subject and then give my reasons for the retrogression in the progress of its surgical treatment.

Gonorrhea of the generative female organs is an acute, specific, septic and destructive inflammation, varying in degree from a mild irritation of the mucous membranes of the generative tract and proximal structures, to a destructive infection of all the generative organs. The infection has a special selective affinity for certain locations of the mucous membrane of the generative tract, which is probably due to their histology.

For instance, the irritation of the labia is not lasting on account of the greater resistance of the skin epithelium. The infection as a specific vaginitis is not an enduring one on account of the simplicity of the histology of the mucous membrane. It has been well established that prolonged discharges of specific nature are due to a chronic infection of the glands of the urethra and cervix.

The pathologist would not permit me to say that there is no such condition as a specific gonorrheal infection of the endometrium. However, I want to say the endometrium is rarely subject to any form of infection and if not destroyed by the surgeon's meddlesome curet, remains as a strong barrier to all forms of infection. I have arrived at such knowledge by numerous postoperative examinations of uteri which had been removed for extensive and destructive lesions of the tubes and ovaries. In spite of the fact there had existed a profuse and virulent discharge for months or years over the endometrium, this membrane had remained in a healthy and quite normal condition.

That the infection extends by continuity of the mucous membrane in a large per cent. of cases is not denied, but this is from certain differences in the pathological topography. I am of the opinion that in a certain percentage of cases there is a harmful degree of infection carried through the blood and lymphatic vessels. My surgery of the condition permits me to offer the following as a solution of this mode of infection through the blood and lymphatic vessels: we find in a number of cases of tubal and ovarian infection that the ovary can be shelled out with a good deal of ease and that the same may



be accomplished without the use of a ligature. The vessels of the surgical neck of the ovary are thrombotic and destroyed, thus the bloodless and easy removal. You also find in this condition that the ovary stands quite apart and distinct from the tube, so that it has not been destroyed by contiguity of structure such as we find in the typical tuboovarian abscess.

Again, the complete destruction of the ovary in the type of case to which I refer, would indicate the infection was internal through its vessels; and further, the absence of extensive adhesions in the neighborhood of the organ would indicate there had been little infection from the fimbriated extremity of the tube. There is no type of infection which gives us so typically the big classical pus tube as that of gonorrhea. That there is a tendency for the infection to more or less confine itself to a particular organ there is no doubt, and in this particular its pathology differs much from that of the puerperal type of infection which does not have a tendency to remain within the confines of any particular viscus, but infiltrates and has little inclination to localization. Such pathological difference may be ascribed to the difference in mode or root of extension of the infection. Puerperal infection being a wound infection travels through the intervention of the lymphatics and blood-vessels and is thus not influenced by the mucous or serous membranes, the reactions of which confine or localize the infection. I believe it is no exaggeration to say that one who is familiar with the two infections can immediately make a differential diagnosis the instant he passes his fingers over the interabdominal pathology on account of the difference in the pathological topography of the two. I have gone into this subject at some length in a previous publication in which I called attention to my belief that it was not altogether due to the fact that the streptococcus was of much more virulence than other organisms, but in puerperal infection the organism was injected into the circulation through some wound of the normal structures and was, therefore, not confined by the normal resisting influences of the mucous or serous membranes.

You may accept the following as a very good working factor: any lesion of infectious type of nature's manufacture is more amenable to treatment than that of traumatic origin which may come from meddlesome and unclean work. A very good example of this is the transforming of the gonorrheal infection of tubes and ovaries into the type of a puerperal infection through the abuse of the over-worked curet; you have made a wound by the curet in an infected area and thus transposed a lesion of the mucous membrane into a

diffuse infiltrating one typical of puerperal infection. Volumes may be written upon the pathology of this subject, which is so capricious as to vary in its lesions from a quite harmless irritation of the mucous and serous membranes to the destruction of the entire female pelvic viscera.

*Treatment.*—With the exception of the very early stage of gonorrheal infection of the female generative organs, the treatment is largely amputation surgery. If I see the patient in the first week of attack in which dysuria and an irritating discharge are the usual symptoms, I put the patient to bed, give her a light or liquid diet, keep the bowels open and as a rule use some antiseptic or cleansing douche. I have never been able to convince myself there is as much that is curative in the antiseptic douche as is the teaching rule. Any sort of vaginal trauma is of necessity harmful, so the douche to be of benefit must be given with extreme care. The old Philadelphia Dispensary prescription of zinc sulphate  $\frac{1}{2}$  dram to 1 pint of hot water given as douche after a thorough cleansing of the vagina with hot water, is as good as anything I know of. However, if such douche is given and the patient keeps on her feet, the discharge will not cease as soon as if she is put to rest and an ordinary salt solution used.

Others claim benefit from antiseptic applications to the infected membranes. I have refrained from such on account of the trauma due to the same. It seems to me this is about where medical treatment ends.

If the patient's acute symptoms subside and she is able to resume her usual vocation we may have done some good, but if this patient returns on account of some exacerbation of the old attack, I feel this patient is surgical from this time on and delay in operative measures is encouraging pathology. I do not delay surgical treatment in this acute stage on account of the fear of a surgical mortality, which is popular teaching, but delay operation in the hope that it will not be necessary to unsex the young woman. Marked or prolonged distention even in the acute stage is an indication for immediate surgery.

In a large percentage of cases after there is tubal involvement in either one or both tubes, the patient is sterile and remains a pathological cripple the rest of her life. I have always opposed conservative surgery in the gonorrheal pelvis. Our many attempts to fertilize the patient have ended in disaster and with so few victories that we are no longer justified in an attempt to save a tube when the potential danger of infection remains in the uterus or other

portions of the genital tract. I have come to this conclusion from no small experience, as 45 per cent. of the abdominal surgery done in the Joseph Price Hospital is for reoperations following just such teachings.

Seeing is believing. I am probably removing more uteri in conjunction with the removal of tubal and ovarian infection of gonorrheal origin than did Dr. Price, yet I am quite sure that my results are no better than his. It is possible I am meeting with a large percentage of cases in which the uterus is extensively involved at its cornu and therefore an indication for its removal. Even in these cases where the cornu of the uterus is involved, a good sized V-shaped piece may be removed with the tube, giving perfect results. After the classical tuboövarian abscess has formed there is but one course to pursue and that is radical removal from above in every case.

I condemn vaginal puncture in every particular as an unsatisfactory and incomplete procedure. The most difficult operations I have ever done have been those following this make-shift operation. Vaginal puncture has been founded upon a misconception of the extent and true nature of the existing condition. Advocates of vaginal puncture contend the procedure is indicated on account of the very ill patient who could not stand a radical suprapubic operation. I contend that the local condition which may be drained by vaginal puncture is not that which is making the patient so seriously ill, but it is the superimposed partial bowel obstruction which is infecting the patient and a positive indication for abdominal surgery. So far as I can remember with all the reoperations I have done or assisted Dr. Price in doing, I have not seen a case in which the vaginal puncture had entered either tubal or ovarian abscess, the puncture merely entering the culdesac and incompletely draining the periuterine abscess. The improvement following such a measure is due to draining a local space, which would with all probability have subsided without surgery, but in a large percentage of such conditions the patient is not relieved and precious time is lost.

I do not believe that we can classify the acute and infectious lesions of the abdominal cavity into operative and nonoperative stages without taking from surgery the strongest post upon which operative measures lean, namely, the earliest possible time for intervention.

It is useless for me to attempt to describe the actual surgery in removal of tubal and ovarian infection of gonorrheal origin. The tendency of gonorrheal infection is to localize itself to a particular

viscus. This marks our surgery for us as it leads to lines of cleavage, thus indicating the outline of enucleation upon which thorough amputation surgery depends. I have described elsewhere that mountain of pathology which begins above the umbilicus and ends at the cervix, a monument to our neglects.

I have described this condition as a mountain of stratified pathology and made a plea for a systematic attack by releasing one layer at a time: first the fixed omentum, next the small bowel, then the big redundant sigmoid which often overlies the entire pelvic viscera and at last the enucleation and removal of the tubes and ovaries.

I have called attention to the dangers of wounding viscera by a ruthless attempt to reach the primary and dependent pathological structures without first releasing the superimposed structures layer by layer.

I have called attention to the dangers of traction upon the viscera and that the same must be freed by the enucleating finger. The operation is a piece of civil engineering done as a systematic procedure through a logical sequel of steps.

*Drainage.*—A large percentage of subacute and chronic cases of gonorrheal infection may be closed without drainage. If there has been a great deal of bleeding incident to a hard enucleation in the presence of pus, it is well to insert a glass tube for twenty-four hours from which the fluid may be removed by syringe or by inserting a gauze drain in the tube.

The tube is an indicator of how much oozing is taking place and may prevent an infected clot in the pelvis. In the great mountains of pathology in which the viscera are much involved and in which a considerable damage has been done to both large and small bowel from the release of the enucleation of the same, the cofferdam of gauze is indicated. This is not altogether on account of drainage but for the mechanical effect which the cofferdam has in preventing the big congested and half paralyzed viscera from collapsing into the pelvis and producing a postoperative bowel obstruction. It cannot help but be clear to the reader that in order to insert such drainage I believe in breaking all adhesions and reaching the distal infecting source in every case. In the worst cases we flush the abdominal cavity with salt solution at a temperature of 115 to 117 degrees. There is little value in flushing the abdominal cavity unless one eviscerates the patient. This is done beneath a stream of hot saline solution and the abdominal cavity is irrigated after the patient has been eviscerated.

These extensive cofferdams of gauze are not touched until the



seventh day. There is no step in this difficult surgery so hard to teach as that of drainage. It is little understood and much meddled with. It is difficult to impress men with the necessity of permitting the drains to remain a sufficient length of time.

241 NORTH EIGHTEENTH STREET.

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## THE PATHOLOGY AND TREATMENT OF PERITONEAL AND PELVIC TUBERCULOSIS.\*

BY

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IN discussing the pathology of peritoneal and pelvic tuberculosis it is only necessary to consider the usual progress of the disease as it is influenced by these tissues. Tuberculosis is the same wherever it exists except that its manifestations may be modified by different tissues.

Hence, peritoneal tissue will influence and modify the natural progress of tuberculosis so as to bring about certain rather definite pathological pictures.

For practical purposes it is useful to give a name to each of the pictures or to classify them into types but from a purely pathological standpoint these so-called types of diseases are merely expressions of different stages of development of the disease.

In the initial stages of peritoneal tuberculosis the serous coat of the bowel is covered with miliary tubercles. These tubercles are of the usual type and structure met with in other parts of the body. If an intestinal ulcer or some other lesion is the primary focus the tubercle may be limited to that immediate neighborhood but in generalized miliary tuberculosis the whole peritoneum, parietal and visceral, is covered. The accompanying inflammatory process may lead to the pouring out of large quantities of serous fluid. If the patient presents herself at this stage of the disease it is usually spoken of as peritoneal tuberculosis with ascites. The amount of serous fluid thrown out will depend upon the acuteness of the infection and the extent of peritoneum involved.

When the amount is small in quantity or where it has been absorbed the inflamed surfaces of the peritoneum come together and adhere. Extensive adhesions mat together the intestines, omentum and other abdominal organs. These adhesions may become so

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dense as to defy the surgeon. It is often impossible to separate coils of intestines or to remove the appendix or uterine appendages. Yet it has been positively proven that these same dense adhesions may later melt down and almost entirely disappear with a return to health. At this stage of the disease the condition is usually called dry adhesive tuberculosis of the peritoneum.

In all stages of peritoneal tuberculosis the mesenteric glands are enlarged. Some of the tubercles may ulcerate, some may develop into nodes and when these nodes and ulcerated areas become agglutinated into masses they often closely simulate carcinoma. This stage is spoken of as the nodular tubercular peritonitis. These masses may undergo caseation and develop abscesses which may open into the bowel or very often they discharge through the umbilicus. Secondary infection is a real danger in these later stages.

The most striking feature about tuberculosis of the Fallopian tubes is the frequency with which both tubes are involved. The convoluted form of the tube and its thick mucous lining favors the growth of the tubercle bacillus just as it does the growth of the gonococcus. Tubercles on the peritoneal covering of the tube are usually only an evidence of peritoneal tuberculosis. The miliary tubercles involving the mucous lining produce a catarrhal inflammation of chronic character. The tubal ostium tends to close and limit the spread of the infection. Masses of broken down caseous material fill the tube except where secondary infection takes place, when we have a pyosalpinx not to be differentiated from that of the gonococcus except by the microscope. The outer end of the tube is most often involved. The tube is usually found in the pouch of Douglas bound down by dense adhesions. It is enlarged and tortuous. Instead of being filled with a white cheesy mass, fibrosi, may have taken place obliterating the lumen of the tube. Occasionally hydrosalpinx may be the last stage of a tubercular salpingitis. Anspach has suggested that congenital hydrosalpinx may be the result of a fetal tubercular salpingitis. Very often the infected tube is wrapped about the ovary giving the appearance of tuboövarian abscess. Some few years ago I saw a case with Dr. Richard Swabodo in which the diagnosis of complete prolapse of the uterus in a virgin had been made. Examination revealed a large pelvic mass which forced the uterus from the vagina. At operation this mass proved to be a great collection of cheesy and purulent material within the broad ligament. The uterus had been gradually evicted from its normal attachments.

Tuberculosis of the uterus is usually confined to the endome-

trium and is discovered by microscopical examination of the scrapings. The tubercles of the endometrium may coalesce and form a thick nodular appearance. Necrosis may take place. The disease may invade the muscle wall and the whole body of the uterus be destroyed. The cervix may be primarily infected and exhibit ulceration and evidence of endocervicitis. Often the internal os acts as a barrier to the infections progress into the body of the uterus.

Tuberculosis of the ovary is less common than tuberculosis of the tube or uterus. Miliary tubercles over the ovary are usually only the evidence of extension of tubal or peritoneal tuberculosis. Tubercles of the ovarian stroma may readily be overlooked by the operator and only discovered by the microscope. When the disease has progressed to the stage of caseation the picture is easy.

Not a few cases have been recorded of tuberculosis of ovarian cysts. It is not possible to determine whether the ovarian cyst became infected with tubercle bacilli or whether the ovary was tubercular before the cyst formed. Recently a patient presented herself complaining of sterility. She had no pain and no other symptom than sterility. Examination revealed a fluctuating mass on the left side. She stated that the right tube and ovary had been removed many years before because of abscess formation. At operation we found no adhesions and commented on the healthy appearance of the peritoneum. A left broad ligament cyst was removed with the tube. The cyst was the size of a fetal head. The tube was later found to be tubercular.

In passing to the second phase of my subject, viz., treatment, there is a break in the line of thought. To know the pathology of peritoneal and pelvic tuberculosis is not enough from which to draw conclusions as to treatment. Tuberculosis is both a local and general disease. It is always most difficult to prove that peritoneal tuberculosis is primary or even that the lesion in the appendix, Fallopian tube, or bowel is the initial lesion. In studying the literature of the subject one is struck with the emphasis put on some particular method of treatment and the disregard for all other agencies in the case tending to a cure.

No matter what the primary cause of tubercular peritonitis, every effort should be made to raise the resisting powers of the body to general infection. In addition to rest, dieting, and good hygienic surroundings, various local measures other than operation have been employed with some success. The administration of iodine and salol have been advocated. Strapping of the abdomen so as

to restrict abdominal movements and increase thoracic respiration and consequently lymphatic absorption, has been recommended by Knox. In a large number of reported cases the x-rays have been used with gratifying results. I have been pleased to find that so great an authority as the late Dr. Murphy in 1915 said "Tubercular peritonitis treated by tuberculin heals more rapidly than tuberculosis of any other tissue in the body, for it comes under the classification of pure tuberculous infection, and tuberculosis *per se* rarely terminates fatally."

When should we operate? How long should the medical treatment be continued? From a study of the literature I gather that the usual course is to continue medical treatment alone so long as the patient's condition improves and to operate when symptoms of retrogression set in. Operation is indicated especially in cases of serous effusion without adhesions and in cases with localized collection of fluid. The simplest form of operative procedure is that of tapping. Because of the tendency to adhesions between the bowels and the abdominal wall, this is a dangerous procedure. In a case which had been previously tapped and subjected to two laparotomies, Wynter reports a cure by injecting 2 drams of 1-1000 adrenalin solution after tapping.

König in 1884 performed laparotomy for peritoneal tuberculosis. Within a few years operation was the most talked of treatment for peritoneal tuberculosis. To-day the tendency is to present a series of cases proving that medical treatment alone is superior to the operative treatment. Laparotomy that drains off a lot of serous fluid saturated with tubercular toxins and permits the free circulation of healthy blood to and from the diseased tissues almost always proves of decided benefit. As regards other details that have received a great deal of attention, whether to dry mop or flush the peritoneal cavity, whether to insert iodoform or some other medicament, it is very doubtful whether they are of any value.

It is the consensus of opinion that drainage should never be employed in tuberculosis of the peritoneum. A persistent tubercular sinus is apt to result. Not every case of ascites should be operated upon. Indeed, too early operation works harm to the patient. But every case of persistent ascites will be benefited by laparotomy. Simple laparotomy in many cases works like a miracle while other cases return in a few months in poor condition. Several years ago the Drs. Mayo stated that peritoneal tuberculosis is four times as prevalent in females as males. From a study of 89 cases in their hospital they reached the conclusion that tuberculosis of the Fallopian



tube is very often the primary focus of infection for the peritoneum. Hence the greater prevalence of peritoneal tuberculosis in the female. Many of their cases that returned with relapse of the peritoneal condition, after as many as four or five laparotomies, were finally cured by performing hysterectomy with removal of the tubes and ovaries.

It would seem that failure of simple laparotomy and evacuation of ascitic fluid to work a uniform benefit is due to reinfection of the peritoneum from lesions in the Fallopian tubes, appendix, or bowel. The infecting focus should be removed whenever possible.

The treatment of tubercular salpingitis and oöphoritis is excision whenever possible. When the adhesions are so dense as to make removal impossible the prognosis is not necessarily bad for many cases are greatly benefited by simple laparotomy. In case of the formation of a pelvic abscess vaginal section and drainage can be performed but its value is doubtful.

Since the uterus is tubercular in one-half the cases of salpingitis it is good surgery to remove it at the same time. In short, the treatment for tuberculosis of the Fallopian tubes, ovary, or uterus is complete excision of all whenever possible.

2615 WEST SOMERSET STREET.

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## PREGNANCY IN CASES OF TUBERCULOSIS OF THE LUNGS.\*

BY

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BEFORE the discovery of the tubercle bacillus, when the diagnosis of tuberculosis of the lungs was made later than at the present day, there were not a few clinicians who thought that pregnancy acted rather favorably than otherwise on the disease. Quite recently Cornet's(1) statistics of tuberculosis of the lungs in Prussia, show that though the mortality is higher in females (1.98 per thousand) than in males (1.76 per thousand) under twenty, in other words, before the child-bearing age, it is lower after twenty (2.91 to 3.46). We start off, therefore, with a certain amount of clinical opinion and some definite statistics that pregnancy does not exert an extremely unfavorable influence.

In spite of this, about 1910 began a German and Italian hysteria

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for the production of abortion or induction of labor in every case manifesting tuberculosis whether acute or chronic, among others advocating this drastic measure being von Hamburger, Heimann, Pradella, Schauta, Ebeler, and Maragliano. The opinion in regard to a tuberculous woman gradually became not uncommon that, if unmarried, she should not marry; if a wife she should not conceive; if pregnant, the pregnancy should be interrupted and sterilization performed; if a mother she should not nurse the child.

PATIENTS IN WHOM TUBERCULOSIS WAS RECOGNIZED AND TREATED BEFORE PREGNANCY.

Case No.	Age when first seen	Number of children before treatment	Number of children after treatment	Years after treatment child born	Living	Years alive after pregnancy
<i>Early:</i>						
1	21	0	3	3	+	9
2	28	0	3	3	+	7
3	20	0	1	5	+	4
4	27	0	1	2	+	6
5	26	1	1	1	Died	1
6	25	0	2	3	+	11
7	28	0	2	1	+	4½
8	26	0	1	2	+	2
9	21	0	1	1	+	¾
10	28	0	2	2	+	11
11	35	2	1	9	+	3
12	23	0	3	4	+	7
13	22	0	1	5	+	2
14	22	0	1	7	+	½
15	20	0	1	6	+	1
16	21	0	1	7	+	½
<i>Moderately Advanced:</i>						
17	22	0	1	11	+	3
18	25	0	1	4	+	4
19	25	0	1	2	+	7
20	21	0	1	2	+	4
<i>Far Advanced:</i>						
21	29	1	2	12	+	3
22	26	0	1	4	Died	¼
23	15	0	1	6	+	½
24	31	1	1	2	+	7
25	25	0	2	3	+	5
26	25	0	1	10	+	5
27	35	0	2	2	+	9

From my own experience, I had reason to believe that this was a grossly exaggerated idea of the unfavorable influence exercised by pregnancy, and I looked up the results in my own cases, in cases at the White Haven Sanatorium, and procured others in the practice of Dr. Flick. In this list, extending over fifteen years, are thirty-eight patients in all stages of the disease. They had after recognition of their tuberculosis fifty children. Of the thirty-eight mothers, five are dead.

The mothers divide themselves into two classes, patients in whom the tuberculosis was recognized before pregnancy and patients in whom it was recognized first during pregnancy. In twenty-seven the disease was recognized and treated before pregnancy and in the majority before marriage. These twenty-seven had thirty-nine children; sixteen were early, four moderately advanced, and seven far advanced cases of tuberculosis. Of these twenty-seven, two died (7 per cent.), one about three months, the other about one year after delivery; the former a far advanced case became pregnant about four years after treatment; the latter, an early case, one year after. The remaining twenty-five are apparently as well as before pregnancy, though three have had three children and six two children. The pregnancies occurred one to twelve years after treatment, the average being four years.

In eleven the disease was recognized during pregnancy, one being early, five moderately advanced and five far advanced. Of these eleven, three died (27 per cent.), one of these three being first seen five days before delivery, one twelve days, and one two months. In other words, there was no chance for treatment of the first two and very little for the third. All three were far advanced cases. Of the remaining eight two far advanced cases seen for the first time at the fifth month, are still under treatment. One was a primipara, the other a sextipara, the latter from her history having had tuberculosis even before the birth of the first child. The remaining six came through successfully and are still alive after periods of time varying from three months to thirteen years, the average being two years.

It is to be remembered that a certain number of tuberculous cases advance to death each year apart from pregnancy or other complication under the best of treatment; it is natural that some should die during the year of pregnancy and the puerperium. Because a patient dies, therefore, during pregnancy or the puerperium does not prove that this complication was the cause. Statistics of patients ten years after treatment show that apart from pregnancy about 10

## PATIENTS IN WHOM TUBERCULOSIS WAS FIRST RECOGNIZED DURING PREGNANCY.

Case No.	Age	Number of child	Pregnant days	Living	Years alive after pregnancy
<i>Early:</i>					
28	25	II	183	+	1
<i>Moderately Advanced:</i>					
29	31	III	61	+	2
30	26	I	30	+	3
31	37	VIII	121	+	2
32	23	IV	152	+	2
33	26	I	152	+	13
<i>Far Advanced:</i>					
34	31	II	275	Died	8 days
35	32	VI	152	+	$\frac{1}{2}$
36	31	V	213	Died	$\frac{1}{12}$
37	25	I	268	Died	$\frac{1}{4}$
38	30	I	152	+	1

per cent. of early cases die, more than 30 per cent. of moderately advanced, and more than 50 per cent. of far advanced. These statistics of cases complicated by pregnancy, the average time since the pregnancy being four years, are better except the time is shorter, and the number of cases too few on which to base absolute conclusions.

I know of only three patients on whom abortion was performed, and all against advice. All three were far advanced and showed some exacerbation of the tuberculosis apparently due to the operation, and I thought almost as much of an exacerbation as is usual to labor at term. Two of the three died four years after the operation, and I have no reason to believe from other experiences that they would have died in any shorter time if the pregnancy had gone to term. Both women were well-to-do and children could have been taken care of without their help.

## ABORTION IN CASES OF TUBERCULOSIS.

Case No.	Age	Number of child	Living	Years alive after abortion
39	37	IV	Died	4
40	33	I	Died	4
41	35	VI	+	3

From advocating abortion in selected cases, certain German and Italian writers gradually came to the interruption of pregnancy at



whatever stage seen, and then to sterilization in order to prevent further pregnancies. The earlier writers advocated ligation of the tubes, later ones removal of the ovaries, in order to produce an artificial menopause, thereby allowing the woman to get the advantage of the subsequent gain in flesh, which frequently ensues. Still others, however, came to believe an artificial menopause harmful on account of the accompanying nervous symptoms and proposed instead removal of the body of the uterus, leaving the ovaries and the neck of the uterus to permit the continuance of menstruation.

Taking the statistics of Ebeler(2), a recent German writer, who operated on thirty-one cases, doing what he considered most suitable in the individual case, we find that he had 13 per cent. of deaths. Taking all of my cases I had also 13 per cent. of deaths, but in addition my thirty-eight cases had fifty children.

Taking the worst statistics I have, namely, those of the eleven women seen for the first time during pregnancy, of whom three (27 per cent.) died, and applying them to the number of actively tuberculous pregnant cases seen in the United States in a year, namely, 32,000, we find that of this 32,000, 8700 mothers would die. Subtracting from these the ones who would die of the operation according to Ebeler's statistics, we find 32,000 mothers operated on and 32,000 children sacrificed to allow less than 5000 mothers to live who would not live anyhow.

Finally, though a certain number of Germans and Italians advocate the extreme measures which I have indicated, there are others, like Runge, Lohlein, Jaffe, Kleinwächter, and most of the French school with Pinard at its head, whose experience makes them forbid the interruption of pregnancy in all stages, for even when the tuberculosis is advanced and acute they contend that at best it is only the destruction of a healthy life in order to lengthen a sickly one.

#### CONCLUSIONS.

I. Active cases of tuberculosis should be advised against marriage; quiescent cases especially after treatment and education bear the duties of marriage sufficiently successfully that if they wish to marry they may be allowed to do so.

II. Quiescent cases becoming pregnant, if put on a rigid régime, may be expected to come through the pregnancy with but little, if any, advance of the tuberculosis.

III. Active cases becoming pregnant run definite risk, yet the operations for abortion, especially those associated with sterilization,

have a mortality making the continuation of the pregnancy more desirable.

2026 CHESTNUT STREET.

#### REFERENCES.

1. Cornet. Tuberculosis, Nothnagel's Practice, Saunders & Co., 1904, p. 276.
2. Ebeler. *Praktische Ergebnisse der Geburtshilfe und Gynäkologie*, 1914, vi, p. 87.

### A MODIFICATION OF THE TECHNIC OF CESAREAN SECTION WITH HYSTERECTOMY.\*

BY

EDWARD A. SCHUMANN, M. D.,

Philadelphia, Pa.

THE subjoined method of performing the operation of Cesarean section with hysterectomy, has been developed as a result of some dissatisfaction on the part of the writer with the various current procedures for the accomplishment of this purpose. The modifications of technic as presented here are designed to protect the peritoneal cavity from infection arising from a frankly septic uterine cavity, to avoid the traumatism and morbidity following the usual Porro operation and to steer a middle course between that eminently conservative procedure and the more simple but more dangerous practice of dropping the cervical stump into the abdomen. The operation is not intended as a substitute for the extraperitoneal Cesarean section which has great advantages and is productive of good results.

There is a considerable group of cases, however, in which, in my opinion, hysterectomy is indicated for the diminution of maternal morbidity. Where there is infection as evidenced by elevation of temperature and leukocytosis, where there has been marked traumatism to the lower uterine segment or when the pregnancy is associated with salpingitis, I consider hysterectomy the operation of choice, in the presence of indications for some form of Cesarean section.

The steps of the operation as modified are as follows: after the usual median incision made low down on the abdomen, the uterus is everted, covered with a hot moist towel and held sharply forward by an assistant. The cardinal layers of the abdominal parietes, viz.; peritoneum, muscle and fascia] are then per-

\* Read at a meeting of the Philadelphia Obstetrical Society, October 4, 1917.

manently sutured in the usual manner, the closure ending only when the posterior border of the eventrated uterus is reached. The small circular opening around the cervix where the uterus protrudes from the abdomen is now caulked with a gauze sponge to prevent leakage into the abdomen, the uterus is opened by the intertubal incision of Fritsch and the fetus extracted. The ovarian and uterine vessels are then ligated, the broad ligaments cut and the uterus amputated at the cervix with the actual cautery, leaving an ample stump. The cervical stump is now drawn together by interrupted or continuous sutures according to the preference of the operator, and the openings in the broad ligaments closed in the usual manner. The gauze packing around the cervix having been withdrawn, the parietal peritoneum is sewn around the closed off uterine stump, leaving it entirely extraperitoneal. The closure of the abdominal incision is then completed the skin and muscle covering the cervical remnant and a very small strip of gutta-percha or rubber dam is carried through the lower angle of the incision to the stump. There is usually no drainage whatever, though a serous discharge may be present for a few days.

By this procedure the general peritoneal cavity has not been soiled by bathing with liquor amnii, the tissues of the presumably infected uterus have been sealed as to their lymph channels by being cut with the cautery knife, the cervix has been consistently maintained as an extraperitoneal remnant and the incision has been closed, leaving no sloughing area to be healed by granulation. The operation as described takes no more time than the usual form of Cesarean section, is not more difficult of performance and subjects the child to no greater risk. The weak point in the whole matter seems to me to be the insistence upon the cervical stump remaining extraperitoneal. I believe that dropping of the closed stump into the abdominal cavity as in the ordinary supravaginal hysterectomy is a perfectly safe and proper practice and that no diffusion of infection will follow such procedure, but I own that years of teaching and a conservative habit of thought have made me, as yet, unwilling to venture the intraperitoneal operation. That such is the correct plan, however, is becoming more definitely settled in my mind with every Cesarean section performed.

## TRANSACTIONS OF THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

SEVENTH SESSION, SEPTEMBER 19, 1917.

*The President, JOHN W. KEEFE, M. D., in the Chair.*

DR. JAMES E. DAVIS, of Detroit, read a paper on

RETAINED SECUNDINES. A STUDY OF ETIOLOGIC FACTORS.\*

### DISCUSSION.

DR. ALBERT GOLDSPOHN, Chicago.—It seems to me that this paper aims to present a natural basis from the standpoint of pathological anatomy of what is likely to be the correct policy in the treatment of incomplete abortions. This subject is a disgrace to the profession now because treatment varies from one extreme to the other. We find men who are devoid of common sense and good judgment in the use of one or the other of these methods and who fail to realize that the truth is apt to lie somewhere between the two extremes. For retained secundines without infection we know what to do; but where there is infection, we are told to let it alone to nature; it will "stink" itself out. This ought to be humiliating to every one of us who claim to have any ability in the practice of our profession. On the other hand, to ignore the fact that nature is carrying on a defensive process here by infiltration, building up a wall around the offending agents, and limiting the entrance of infectious material to the general system, and to imagine that we can do better than nature, with a pernicious curet, is equally reprehensible. So the cases should be individualized and the natural processes kept clearly in view. A former teacher of mine (Moses Gunn) years ago used to say that we are hod carriers to nature. Nature is the chief factor. Can we do something in these cases that will assist nature, or are our strokes going to be as harmful as they are useful? Let this be our attitude and we will be more likely to do something that may assist nature and not hinder her. In that regard the technic of intrauterine irrigation with alcohol so efficiently demonstrated to us by Dr. Ill is a great help. I question very much the propriety of using an instrument other than a finger as a curet in a puerperal uterus and I would think twice before using a curet in septic abortion unless bleeding makes it necessary. Alcohol irrigation will do a great deal of good.

\* For original article, see page 192.



DR. HUGO O. PANTZER, Indianapolis, Indiana.—A study of retained secundines as the etiological factors which produce retention, is of unusual interest. Musing collaterally, why is it that women suffer so much more in their sexual organs than do males? If we consider that traumatism attends ovulation and menstruation, the one occurring to the ovary about midway between two menstruations, and the other to the uterus and tubes at the menstrual period, this may have a bearing upon this question. The observation is frequent that a patient takes cold and ever afterward has trouble with menstruation. It is stupid to accept the fact without delving deeper. A so-called cold often is a bacteremic disease. It may be acute or an exacerbation of a chronic infectious process pertaining to tonsils, teeth or other locality. The trauma of menstruation constitute in the ovary and endometrium, each, a *locus minoris resistentiæ* and their infection is therefore easily possible. A woman may suffer a slight jolt which seemingly amounts to nothing, but if attended with hemorrhage, while bacteremic disease is present, it may result in infection, that may become chronic in many cases.

To the extent that the endometrium is liable to such infection, it may be assumed that abortion in quite a percentage of cases is due to a chronic endometritis, which is inimical to the further course of pregnancy.

DR. DAVIS (closing).—I have nothing more to say except to call attention to one or two points. The natural size of a decidual cast about the fourteenth day is quite small, as shown in Waterston's case. One appreciates how easy it is to miss the product of conception at this time, when the entire mass comes away. However, if only a part of the product is expelled, it is still more difficult. In the average criminal abortion case the decidua reflexa only is opened. It is but a very short distance through the reflexa for the instrument to pass and rupture of the ovum occurs through this relatively small opening, leaving the remainder of the product attached to the wall of the uterus.

DR. CHARLES L. ILL, of Newark, N. J., read a paper on

#### THE ALCOHOL DRAIN IN SEPTIC CASES REQUIRING CESAREAN SECTION.\*

##### DISCUSSION.

DR. AUGUST A. STRASSER, Arlington, N. J.—The discussion of Dr. Ill's paper naturally falls into two categories; first, the one in which we must take up the criticism and the answer to such criticism of performing Cesarean section in septic cases. Second, the treatment of a uterus that has been emptied of its contents by Cesarean section and has become septic, by the Carossa treatment as advocated by Dr. Edward J. Ill, in an earlier paper and which is almost universally used in this part of the country, popularized by his statements and by his teaching and use. Of course, it is perfectly

\* For original article see page 83.

obvious that the criticism directed against the opening of a uterus that is potentially septic is this, that knowing such to be the case it is jeopardizing the woman's life where there is a distinct desire for progeny. Our first desideratum is the saving of life; our second to preserve a functioning organ. Under these circumstances, it is perfectly right and proper that if we know the uterus is only potentially and not actually septic, to do a classical Cesarean section or a Cesarean section through the extraperitoneal route and to deliver the child, provided it is viable and the mother is anxious to take the risk. However, when the Cesareanized uterus is proven to be absolutely septic afterward, the treatment of it is one that is of grave moment. You can, of course, remove the uterus by a Porro, thus sterilizing the woman for future progeny. You can follow out this treatment which we have used in ordinary septic endometritis, the Carossa method, and the report that Dr. Ill has given us of ten cases amply justifies it as an expedient to be used when such an unfortunate occurrence takes place. For that reason it is worth while and, in the very important paper that Dr. Ill has presented to us to-day, it is well to keep in mind when such a possibility occurs. To remove a septic uterus following Cesarean section is not a necessity and a trial of the Carossa treatment is certainly well worth while. In those cases we have had in which there has been sloughing of the abdominal wall and a discharge of the alcohol through the wound, there has not resulted any material damage to the women, for all of them have gotten well promptly.

DR. ALBERT GOLDSPOHN, Chicago.—My experience in obstetrics is small, but we all get these neglected, extreme, and usually infected cases brought into the hospital when other attendants have gotten to the end of their means, and most of these were treated by pubiotomy with good results. So far as my experience goes, both mother and child have recovered.

Why is it that in this country suprapubic extraperitoneal section is not favored? We hear little or nothing about it, but in Germany in the class of cases Dr. Ill has related, the women would be treated chiefly by that method and with good results. Why is it that this operation has not become more popular in this country?

DR. EDWARD J. ILL, Newark, N. J.—I have talked so much on the question of the alcohol drain that my professional friends around here know all about it. In going about I have had some practitioners say to me that they did not get the same results from the use of the alcohol drain that I did. One very prominent obstetrical teacher told me he had to give it up because of the bad results. I did not understand why he should have such bad results from its use. I asked him what he did. He brought me a rubber tube nearly an inch in diameter and said, "I make sure that I get the whole cavity flushed, and in order to do so I put this rubber tube into the uterus and attach a smaller rubber tube and inject the alcohol." That is all wrong and I told him so. It so happened that one of my colleagues was called to see a case that this gentleman had delivered and the woman became septic and my colleague showed him how

we applied this alcohol drain. (Here the speaker demonstrated the application of the drain on the blackboard.) You introduce the rubber tube and fill all the spaces loosely with iodoform gauze.

DR. CARSTENS.—What strength of iodoform do you use?

DR. ILL.—Ten per cent. Be sure that the tube never goes up to the top of the fundus. Shove the tube along until it reaches that point, and withdraw it for half an inch. Very soon the uterus will contract, and if this end of the tube is not slightly withdrawn you may get decubitus at the upper end of the tube. Having done that, you must adopt some method which will keep the tube in place. You may suture it to the cervix, but I would suggest that you do not do that, as you must not inflict new wounds in septic tissue, but attach a string. This tube is about number twenty-six French. There is a white ring vulcanized into it, and that white ring is just inside the vulva. In the ordinary case of sepsis it is left there from three to four or five days. That ring is for the attendant to see and know that the tube has not slipped out. If you introduce the tube it will slip out unless you fasten it in some way. After the tube has been inserted, the portion of the tube which emerges from the cervix receives a double loop of string which never slips one way or the other. Then we tie the gauze as it leaves the uterus firmly to the tube, with this string, and fill the vagina with the rest of that 5 yards of gauze. Having done this, 25 per cent. of alcohol is put into the funnel and allowed to flow slowly into the uterus. In some of the earlier cases we operated in tenement houses and any attendant could look after the tube. We were afraid to take these cases to the hospital.

DR. KEEFE.—How long do you leave the gauze in?

DR. ILL.—The gauze is allowed to remain in until the temperature goes below  $101^{\circ}$ , usually from three to five days. An objection claimed against this alcohol drain is that it does not remove the poison from the system. You heard yesterday that it was the practice to let certain obstetrical cases "stink" themselves out. Would you let any other septic cavity stink itself out, such as the nose, the ear, the gall-bladder, or the appendix? You would not think of it. While this method may not prevent a septic process in the system generally, it does prevent new infections from the septic cavity. The system throws off a certain amount of poison. You do not allow any more poison to enter the system. You prevent absolutely with alcohol the further decomposition of these particles of material that are in the uterus. We know that a 25 per cent. solution of alcohol penetrates dead tissue very much more than a 50 per cent. or a 90 per cent. solution. We know that from our laboratory work. When we make a microscopic section of a piece of tissue, we put it in a 25 per cent. solution for penetration, later into a 50, 75 or 90 per cent. solution. It is quite different whether you put alcohol in or carbolic acid or any other antiseptic. These strong antiseptics will coagulate the outer layer of dead tissue, but will never penetrate septic dead material as alcohol will do. Nor does alcohol affect live tissue. I apply the alcohol every two hours. It runs out along the tube.



DR. ABRAHAM J. RONGY, New York.—May I ask Dr. Ill a question? Was there absolute contraction of the pelvis in these cases? In other words, did these women suffer from an absolute contraction of the pelvis or a relative disproportion?

DR. ILL.—There was absolute contraction of the pelvis.

DR. RONGY.—So that the normal birth of the child was impossible?

DR. ILL.—Yes.

DR. RONGY (continuing).—There are a certain number of cases in which attempts at the use of the forceps have been made in which a disproportion between the fetal head and the pelvis exists. In such cases, if the child is still viable, we still have another procedure which we may resort to, namely, pubiotomy. In cases that have been misjudged and neglected, pubiotomy offers the best chance for delivery both to the mother and the child. Last Spring I reported twenty-eight cases of pubiotomy which were performed in exactly the class of cases that I have described above.

We must be careful in performing Cesarean section in cases who had a great deal of manipulation, either by the family physician or midwife. The danger for the mother is too great. The mortality of Cesarean section in this class of patients is more than 20 per cent. We have no right to impose such a risk on the mother for the sake of a child which is not fully viable. The fact that the fetal heart sounds are still audible does not mean that the child is fully viable. Such patients if possible, should be delivered by the vaginal route.

DR. EDWARD A. WEISS, Pittsburgh.—Acting on the suggestion of Dr. Ill, I have used this method but found some difficulty in the introduction of the gauze properly. Recently it has been recommended to treat the infected uterus with Dakin solution through the Dakin solution tubes. The Dakin tubes are small rubber tubes covered with Turkish toweling. These are easily introduced and a cross tube which fits the smaller tube can be so adjusted that the cross tube lies in close contact with the cervix. There is no likelihood of the tube slipping out of the vagina, and then the alcohol instead of Dakin solution is allowed to penetrate every two hours as Dr. Ill has recommended.

I would sound a note of warning against the use of Dakin's solution in the uterus. In one case seen in consultation it had been used with disastrous results, due to the enthusiasm of the attending physician. The use of alcohol as recommended by Dr. Ill, with the modification of the Dakin tubes, will prove very efficacious.

DR. ROBERT T. MORRIS, of New York, read a paper on

#### NOTES ON METHODS FOR OVERCOMING MECHANICAL OBSTACLES TO PREGNANCY.\*

DR. I. W. POTTER, of Buffalo, read a paper on

#### VERSION, WITH REPORT OF ONE HUNDRED AND FIFTY CASES SINCE SEPTEMBER, 1916.†

\* For original article see page 208.

† For original article see page 215.



DR. E. GUSTAV ZINKE, of Cincinnati, read a paper on

DIAGNOSIS AND MANAGEMENT OF NARROW PELVIS.\*

DISCUSSION OF THE PAPERS OF DRS. MORRIS, POTTER, AND ZINKE.

DR. E. GUSTAV ZINKE, Cincinnati, Ohio.—I do not know much about Dr. Morris' artistic procedures to make possible and to facilitate a pregnancy in the unfortunate cases illustrated by him; but, I cannot help saying to myself that it would be a great accomplishment if, after a mutilating operation upon the internal genitalia, we could, by another plastic procedure, establish the possibility of pregnancy. I will confine my remarks very largely to Dr. Potter's honest, frank, and well-meaning paper.

Dr. Potter has virtually placed the obstetrician of to-day on trial. What I have said in my paper pertains to narrow pelvis only. Dr. Potter has extended prophylactic version to normal pelvis, natural presentations in otherwise uncomplicated labors and to cases in which there is no difference in proportion between the pelvic passage and the child to be born. He has made some reference to cases of persistent occipitoposterior position of the occiput and to face presentations. I have seen a good many cases of persistent occipitoposterior position, and also many of face presentations which were, unquestionably, benefited by an early version, and I unhesitatingly endorse the practice in these cases. But he who is thoroughly familiar with the means of diagnosis of the various presentations and the position of the child and with the mechanism of labor characteristic of them, knows that the vast majority of cases of occipitoposterior position correct themselves spontaneously, or with a little assistance on our part, if the head is well flexed and easy of configuration. The competent obstetrician who examines his patient early and carefully, knows that, when he hears the fetal heart's impulse to the left of the median line of the abdomen and below the level of the umbilicus, with the long axis of the uterus corresponding with the long axis of the mother's body, the child's head will enter the pelvic inlet with its anteroposterior diameter in the right oblique diameter of the pelvis. He also knows that when, under such circumstances, the head is well flexed, it will readily descend into a normal pelvic cavity and that, in the vast majority of cases, the occiput rotates anteriorly and the head is expelled as though it had been in an occipitoanterior position from the beginning. Many of these cases deliver themselves without much difficulty; it is only when there is a disproportion between the head and the pelvic cavity that delay is encountered and the occiput persists remaining posteriorly. Here, too, version is not only justifiable, but indicated. A prophylactic version in many of these cases, even in a normal pelvis, may give a better result than the test of labor—waiting for anterior rotation. It will lessen the sufferings of the mother, shorten labor and result in less damage to the soft parts. But as long as the pelvis

\* For original article see page 221.

is ample, as long as the head is well flexed and descends readily into the cavity, as long as rotatory movements of the head are evident, as long as the pains are sharp and effective, and the mother's soft parts remain moist, soft, and free from tenderness, and as long as there is no elevation of temperature or increase in pulse frequency, just so long it is our duty to wait and permit nature to take care of the case.

I must take issue with the author of the paper in those instances in which he resorts to version in normal cases, even with the most careful aseptic precautions, simply for the purpose of shortening labor and of giving himself an opportunity to attend to another patient. This is wrong. It is a dangerous practice and misleading doctrine.

This subject was, in a measure, discussed yesterday. It is just this sort of needless interference, or better still, meddlesome midwifery, which, if it is sanctioned by the profession, will render the maternal and fetal mortality and morbidity of obstetrics higher than they have ever been in the past.

DR. G. VAN AMBER BROWN, Detroit.—I have done the operation Dr. Morris has described once, hoping that pregnancy might follow. The woman has not become pregnant. It is now three years since the operation was done. We have been able, however, to preserve her menstrual function and she has a very much better nervous system than she had before her operation.

Along the line of conservative surgery of the uterine adnexa, some eight or ten years ago I presented before the Michigan State Medical Society a paper on this subject in which I reported twenty-two cases. Since that time, a paper by Dr. Clark, of Philadelphia, has appeared in which he has quoted from my publication. My object in particular in writing the paper was to present one case which I felt was of especial interest. A woman after nine years of married life was very anxious to become a mother. I studied the question and found encouragement from experiments which has been performed in animals. For instance, with a double cornuate uterus (as in dogs), it is found that you can remove one cornua of the uterus and on the opposite side the ovary and that pregnancy will take place through the so-called pelvic flow. When I opened this patient's abdomen I found a large tube down, with an immense ovarian cyst. On the other side there is a small ovarian cyst. The woman had a retroverted uterus. We did shortening of the round ligaments. I left her with a uterus in a normal position and just a part of the tube on one side, with an ovarian tissue. On the other side the tube was taken out entirely and part of the ovary, so that the woman had an imperfect tube on one side and an imperfect ovary on the other. We know that we can sew mucous membrane to mucous membrane and it will not heal. I made a cuff at the distal end of the tube, however, turning it back like a shirt cuff and stitched it. I told the man and wife that if pregnancy should take place it must occur soon after the operation. Eleven months and thirteen days afterward I delivered this woman of a full-term healthy boy.

I was impressed with one point, that of using the intestine in conservative surgery of the adnexa as outlined by Dr. Morris. We have not much to look forward to in conservative work on the tubes. His is a rare procedure. If a portion of the intestine utilized as a tube acts as Dr. Morris has said it does, it seems that this gives us new hope along this line.

As regards adhesions, if fat does prove to be of any use, would it not be feasible to dissect the redundant fat from the abdominal wall when it seems advisable? Try out that fat, let it cool and use it intraabdominally.

DR. ISADORE L. HILL, New York.—My remarks will be limited to the example set by brilliancy in operating. When Dr. Morris opens the abdomen of a patient from time to time to observe progress in interesting experimental work and does resection of the bowel as one step of an operation, for the theoretical cure of sterility, it is perfectly safe, because he can do it. He is highly skilled and there is little risk. Moreover, there will be few who have the courage to follow his example and few patients who would demand the operation.

When we come to the question of normal obstetrics which is going on all the time and which nearly all physicians feel themselves qualified to practice, the force of example is more important, because if we recognize a new procedure or the general adoption of an old one like this on a large scale it would be very dangerous.

Dr. Potter has done version in about 40 per cent. of his recent cases. It has been done by him without any mortality and we cannot criticise his work. But version has been done for centuries and no one else has been endowed with power to do it the number of times that he has without a mortality, and yet no new procedure has been exploited by Dr. Potter to revolutionize the operation.

Yesterday Dr. Julius Levy, of Newark, gave us the statistics of mortality in the practice of midwives and Dr. Harrar told us what happened in 100,000 labors in one of our greatest obstetrical institutions, and we find a surprisingly small number of women died when taken care of by midwives, and why? The midwife is not efficient. But most of the time she allows Nature to take her course. That is the only salvation in midwife practice, not that it is an ideal system of obstetrics. I feel convinced it would be safer for women to be abandoned on a prairie and let them deliver themselves with such means as they themselves could improvise than to be taken care of by the rank and file of our practitioners if version were done by them on the scale that Dr. Potter has done it. I believe the morbidity and mortality would be less.

Dr. Harrar's statistics showed a higher mortality rate for cases in the hospital than for outdoor service. I have conducted an outdoor service for fifteen years in which students do the work. They are not good obstetricians. There is nothing to recommend the system except one thing and that is, they are instructed to keep their hands off. Their work is checked up as it also is in the outdoor department of the Lying-In Hospital. They are on a case



a certain length of time and then make a report. A little later they make a second report. Then their work is checked up again and again by staff physicians and they are not permitted to interfere. As a result, the lowest mortality statistics you will find anywhere in obstetrics are in the supervised outdoor obstetrical services where students do the work, and the more highly trained obstetricians supervise. They will not allow students to do anything that is not conservative and safe merely to hurry a case along. In private practice the physician is often pressed by the demands of his other work and it is not wise to set an example of frequent radical interference for slow labor. Even in the splendid statistics of Cesarean section given in the New York Lying-In Hospital report, we found yesterday that Dr. Harrar spoke of thirteen cases among the deaths that occurred from peritonitis following Cesarean section. Undoubtedly Cesarean section saves many lives, but there is also a probability that some of these cases might have been subjected to the test of labor and might have delivered themselves if the operation were not so attractive.

DR. A. B. MILLER, Syracuse, New York.—This picture exhibited by Dr. Morris reminds me of an experience which was actuated by his writings which I feel it is timely to bring to the attention of the Association. I had a patient from a neighboring city who consulted me following an operation for the removal of both ovaries, with all the reflex symptoms which we see after that operation. She desired that her symptoms be relieved, if possible, and this was about the time when we were thinking of transplanting ovaries to lessen symptoms. I told her it might be possible to transplant an ovary from another person and she might be benefitted. She jumped at this suggestion at once. It seemed what she wanted had never been heard of before, an idea which has been advocated on this floor by two or three speakers. I referred the matter to the patient to decide. I felt that my judgment was none too good and hers was worse. I suggested that we make use of the services of an alienist and after that to consult also two internists, which she did. I received a communication that all three had advised that an operative procedure be resorted to, such as transplantation of an ovary, in order to see what the results might be. A few days subsequently she made preparations to go to the hospital. Dr. Morris has told us that he finds other patients are not only anxious but are willing to give up a portion of an ovary if it will benefit some one else. I stated to her that the patient from whom I was going to get an ovary was a colored woman. She positively objected to this and said she did not care to have the ovary of a colored woman transplanted into her. Within a week or ten days another patient came in and the operative procedure was performed. Strange as it may seem, while the operative work was done sixteen months previously, she had following the operation two normal menstrual periods but her menstrual condition from this time did not seem to improve. I advised her to take a rest in an institution in the northern part of the state for her nervous condition. She did so and remained



in this institution for eight or nine months. At the seventh or eighth month I received a communication from her stating she was pregnant and apparently was very much delighted. She also stated that I was the father of her unborn child; that she had conceived atmospherically and there was no question but what it was going to be a boy. She said she was coming to our city to be confined. It turned out to be one of those cases of pseudocyesis gravidarum. I have learned within the past year that this woman has recovered her health.

We have had other cases which have a bearing on Dr. Morris' paper. In one case I removed the tube and ovary on one side; taking the tube off from the cornu of the uterus, leaving a portion of the tube on the opposite side. Five or six years afterward the patient came to see me and stated that she had an abdominal growth and desired me to perform an operation for its removal. I examined her carefully and found that she was about to become a mother. It is difficult to see how with a portion of an ovary on one side and a portion of a tube on the opposite side, that this woman could conceive. Had I not done the operation I would be skeptical. But we are told that this is not so infrequent.

I am glad to hear the report of Dr. Potter and to learn the progressive work he is doing in Buffalo. I happen to be the state examiner in obstetrics and gynecology and I will certainly be more considerate to students than I have been in the past, because I have not accepted version for those conditions which he has advocated, perhaps as freely as I might be justified in doing.

DR. MERRILL A. SWINEY, Bayonne, N. J.—I would like to ask Dr. Morris what he would do in a case like this: I had a patient about two years ago who had tuberculosis of the outer part of both tubes, which were closed and very edematous, with the outer two-thirds covered with miliary tubercles. I tied them off as tightly as I could, so they would reopen (Kelly). I left about an inch on one side and three-quarters of an inch on the other. This woman is very anxious to have a child. She was twenty-two years of age when operated upon and has not conceived. She is bothering me a great deal, as to an operation which would in some way enable her to conceive. We have examined her husband's spermatic fluid and it is normal.

DR. JAMES E. DAVIS, Detroit.—I would like Dr. Potter to state specifically the technic which he follows. I wish he would also state the average time required for the care of cases.

DR. ABRAHAM J. RONGY, New York.—I believe that I was one of the gentlemen to whom Dr. Potter was grateful for the discussion of his paper last year. I think Dr. Potter contributed a much better paper this year. However, he puts us on the defensive, in that he comes before us with a statement of what he can do and cares very little what others cannot do. That leaves very little room for discussion.

I fail to see wherein version is indicated in 40 per cent. of any man's obstetrical practice, or as in this instance, in 200 cases out of a total of 500.

The doctor stated that he performs versions in primipara in whom the cervix is dilated or dilatable, for the purpose of shortening labor. I feel that the woman ought to be given a chance to see what she can do herself and, therefore, Dr. Potter's procedure has no place in obstetrics.

I should like to ask Dr. Potter why he does not use small doses of pituitrin, particularly in multiparous patients in whom the cervix is dilated or dilatable. In such cases small doses of pituitrin will terminate labor much sooner than he can terminate it by version. I am sure there is no risk whatsoever attached to the use of small doses of pituitrin in the hands of such an astute obstetrician as Dr. Potter.

For right occipitoposterior positions he did version 115 times. What I said last year I will repeat this year that when a multiparae is examined early in labor you are likely to find the head in a posterior position. That in itself is not an indication for version. If the woman is given a chance, the posterior position will rectify itself as soon as she has strong pains.

Finally, the conclusion that I have come to after listening to Dr. Potter's paper is, that he can deliver a patient better than the average obstetrician but when the average physician reads that version is used as an obstetrical procedure for the purpose of shortening labor, and that statement is endorsed by this Association, it will tend to lower instead of raise the standard of the practice of obstetrics.

DR. HERMAN E. HAYD, Buffalo, New York.—It is an unusual thing for me to discuss an obstetrical paper, but as Dr. Potter comes from my city and his statements have been challenged, I am pleased to say that I stand sponsor for his honesty and integrity and whatever statements he made last year and to-day are based upon honest convictions, the result of an enormous obstetrical experience. So far as his mechanical and technical ability are concerned, I may add, that I never saw any one do a version more beautifully than he can. I studied in Vienna and worked under Sparth and Carl Braun and for years had a good obstetrical practice and I should know something about obstetrics. I do not wish to stand sponsor for Dr. Potter's obstetrical methods as I am not qualified in those lines, but I do believe, I can judiciously and intelligently pass judgment upon them. Last year most of the members thought they had "knocked him out," but you see, he comes back with the courage of his convictions and we cannot help but admire him for it.

I am satisfied, that he is going to stimulate greater interest in this subject and that you obstetricians will be practising more versions than you have in the past, because, if Dr. Potter can get such results as his papers show, so can Rongy, Zinke, and other first-class obstetrical operators. Of course, the general practitioner has no business to do what Dr. Potter is advocating, unless he is specially trained in modern surgery.

He takes the stand that most delayed labors are the result of faulty positions, such as occipitoposterior, and that he finds them so often because he interferes so much earlier than you do and can

with his hand in the uterus make a better diagnosis than you can by fontanelles and overlapping sutures. Secondly, that forceps delivery is more dangerous to mother and child than a version. Thirdly, that he shortens labor by this interference and thereby lessens pain and suffering with no increased dangers to mother and child, as he has proved in these two papers.

With a record of 700 versions he brings his charts and hospital records of his last 200 cases to prove his position. It does seem to me that something should have been done to lessen the terrible pains of child bed; and yet after thirty-five years of practice the same teaching as I got, the student gets to-day, notwithstanding the strenuousness and the brains that are exhibited in the arts and sciences and in constructive mechanics, where such wonderful advances have been made. We saw how willingly and voraciously twilight sleep was accepted, because it promised relief from suffering, but it has failed. Dr. Potter was educated under the most conservative teaching, where he was told that a man must have an obstetrical temperament to do good and safe obstetrics, which meant to sit for hours until a woman delivered herself. Gradually his business grew and necessitated haste on his part, but with it came relief of pain and suffering and no increased mortality or morbidity to mother and child. Take his last 700 cases without a maternal death and no serious injuries to the mother's soft parts. Do not question his ability to recognize a torn perineum; a man who has done all kinds of abdominal and pelvic surgery and 200 Cesarean sections will not overlook perineal tears.

Among the cases noted in the paper of to-day eighty-five were primipara and 115 multipara, and three cases were left occipitoposterior positions and thirty were right occipitoposterior positions, and these posterior positions are recognized as the cause of tedious labors. Of these cases, sixteen of the babies were still-born, one hydrocephalic, on which he perforated the after-coming head; two were macerated; two placenta previas; eight had prolapsed cords, two complete, and six incomplete, and so on. I do not know any obstetrician in this hall to-day or in this country who can show a better record with these complicated conditions. Gentlemen be judicial. Dr. Potter has no doubt brought us something good and you experienced men must try it out. There is no "divinity shaping his ends or directing his work." He simply cut loose from all obstetrical teaching, and I cannot help but say that there must be much that is good in what he says, contrary to the objections of other distinguished teachers of obstetrics in this Association.

Last year, the members of this Association questioned Dr. Potter's honesty. He took you all by surprise in the large number of versions he had done, but this year he challenges you to beat his record, and makes these claims: (1) He shortens labor without danger to mother and child. (2) That long labors are usually due to occipitoposterior positions, and that these positions should be early corrected, even, if in the great majority of cases they would correct



themselves. (3) He lessens pain and suffering, and (4) that by his methods he can better attend to his large practice and conserve his own energies and make the work of the skilled and consulting obstetrician less onerous.

Dr. Rongy advocates pituitrin to hurry his cases and Dr. Potter relies upon version, with which he says he has absolute control of the delivery, and with his skill, care, and antiseptic precautions, I think he presents a very strong brief to-day in this second report of 200 cases.

DR. MORRIS (closing on his part).—In the first place, concerning the use of the patient's own fat, tried out, I have not employed this method. Some of that fat is changed by heat into an albumin which in the patient's individual case might sometimes become a toxalbumin, but that may be a theoretical objection. A slice of the patient's own fresh adipose tissue, as it comes from any part of the abdomen, tossed into salt solution until you are ready to use it, would be accepted by that patient. The patient will take up anything that originally belonged to her in the way of tissue in the nature of a graft. Ether for adhesions I have not tried at all.

In a case of tuberculosis of the oviducts in which the tuberculosis has presumably come to a halt, in all probability the lumen is now closed. I would treat that case not by attempting to open that closed lumen, but by making a good long incision in the manner I show you, so that the ovum could get in without much difficulty and to prevent immediate closure, I would put in a lot of aristol to keep the margins apart. Before the aristol has become absorbed entirely the cells from the lining of the oviduct will conduct repair, thus presenting an obstacle to closure by peritoneal exudate. If there were much inflammatory reaction, the peritoneum might throw out an exudate and seal the whole area in again, but at any rate, that would be my first resource as stated. That failing and the patient being willing to undergo extensive experimental work, which is purely speculative, one might bring a segment of the ileum, include the ovary and carry a bit of the ileum clear to the open fundus of the uterus. I have demonstrated that this may be done, but the usefulness of it I do not know anything about. I have only done it once, both the patient and I agreeing that it was purely experimental.

DR. POTTER (closing).—I do not do these versions so that I can get home quickly. I do versions entirely in the interest of my patients. I consider it better to do a version than to use instruments and in that way I reduce their suffering at the time of labor.

So far as the after-results are concerned, I have been engaged in practice for twenty-six years, and I find my patients get well better and quicker now than they used to when forceps were used. I am pleased to note that Dr. Zinke said more about version this year than he did at the last meeting. He mentioned it several times in his paper. Whatever you find out to be the position of the fetal head will depend upon when you examine your patient. It is the same way with Cesarean section; it is a matter of opinion of the different operators.



As to my technic, it was fully explained in the paper I presented last year. When a woman is about to be confined the vulva is shaved and she is catheterized. She is anesthetized usually with chloroform. We have not had any bad results from chloroform. When the patient is sound asleep she is placed on the table, or if she is a heavy woman, I put her on the table before she is asleep, because that saves lifting her. Then under deep anesthesia, with the legs held up, using a sheet for a leg holder, or with two assistants, one on each side, holding up the legs, I use a long glove that reaches to the elbow. I use sterilized green soap. I introduce my left hand well up to the fundus so that I can explore the uterine cavity completely. I do not grasp one foot the way the text-books tell us, but take hold of the two feet, I get them between my fingers and bring them down gently, at the same time lifting the head up on the outside. When the knees are outside the vulva, the version is complete. Then I make gentle traction toward the pelvic floor, rotating the back of the child anteriorly by pulling on the anterior leg. When the scapulæ are out, I reach for the arm but not before. I have never broken the arm of a baby but once, and that was a dead macerated fetus I was getting out in a hurry, because the woman had to be delivered quickly. Getting hold of the anterior arm, bringing it down and then following with the posterior arm, I hold the baby at right angles to the mother with my fingers in the child's mouth, because the minute you let extension take place you have trouble. It is flexion from the time you start until the time you finish.

Bring the chin down, hold the feet up and bring the baby out. When the mouth is out let the baby get rid of the mucus, or milk it down from the larynx. The baby will gasp when the head is out. Under deep anesthesia, if you have two assistants, you can bring the knees of the patient together, because it relaxes the soft parts; then bring the head down and out. I find this method of delivery is far better for the mothers and children than the use of instruments, as there is no pressure on the child's head.

DR. RALPH WALDO, of New York, read a paper on

#### A CASE OF GANGRENE OF UTERINE FIBROID FOLLOWING PARTURITION. PANHYSTERECTOMY.\*

DR. HUGO O. PANTZER, Indianapolis, Indiana.—About twenty years ago I confined a woman who, on the following day revealed a large tumor to one side of the pelvis. Foul discharge followed. This occurred when we were not doing hysterectomy by a reliable technic and rather shunned opening the abdomen. A tumor was removed *per vaginam* the size of a fetal head. The patient made a good recovery.

DR. WALDO (closing).—I have seen quite a number of cases of gangrenous fibroids in nonpregnant women. Two cases of gangrenous fibroids during parturition, occurred in the practice of other

\* For original article see page 230.

men and these two patients died from sepsis. Considering the condition of the uterus and endometrium found in the case I have related, I do not believe the woman would have survived. Fortunately we performed panhysterectomy before there was apparent infection of the peritoneum, and she did not have peritonitis following the operation.

DR. J. N. WEST, of New York, read a paper on

A BONY NEW GROWTH COMPLICATING PREGNANCY.\*

DISCUSSION.

DR. JAMES E. DAVIS, Detroit.—This case is very interesting indeed and causes one to think of the phylogenetic relation of the urogenital system and the generative system. These are very closely related and it is not an unusual thing to find deposits of bone in the bladder. Nearly every one who has done bladder work has had at some time this experience. It is also the experience of the pathologist who examines a large number of tissue sections to find numerous bony deposits of the generative system. It is a very interesting thing that the metaplasia of connective tissue into bone tissue is seen not infrequently. These cases are no doubt a return, if you will, to an embryonic condition, or there are embryonic rests remaining which later on undergo a change and development takes place, so that they become evident macroscopically.

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## TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

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SECTION ON OBSTETRICS AND GYNECOLOGY.

*Stated Meeting, Held November 27, 1917.*

DR. GEORGE W. KOSMAK, *in the Chair.*

DR. I. C. RUBIN presented a case of

LARGE PEDUNCULATED CAVERNOUS ANGIOMA OF THE LIVER REACHING  
INTO THE PELVIS AND CAUSING OBSTETRIC DIFFICULTY.†

DR. GEO. W. KOSMAK presented a report of a case of

TWIN PREGNANCY WITH ONE TWIN AN ANENCEPHALIC MONSTER.

The patient, Mrs. I. L., aged thirty-five years, Russian, para-iv, was admitted to the Second Division of the Lying-In Hospital on

\* For original article see page 232.

† For original article see page 273.

October 13, 1917. The abdomen was markedly enlarged and a diagnosis of twin pregnancy was made. At the time of admission a cord was found prolapsed and the cervix four fingers dilated, vertex presenting. An immediate full dilatation was secured and a version followed by a breech extraction done. A normal baby weighing 2200 grams was delivered. The abdomen remained very greatly distended and as there seemed to be no reason for waiting the membranes were ruptured and a large quantity, probably a gallon, of liquor amnii allowed to escape. The second fetus presented by the breech and was easily extracted. It was an anencephalic monster weighing 1420 grams and died about an hour after birth. An examination of the secundines showed two distinct placenta and sacs. The first measured 19 by 13 cm., the second 16 by 17 cm. There were no abnormalities in the placenta. The sex was the same in both fetuses. The mother made an uneventful recovery and was discharged with her baby in good condition.

The subject of twin pregnancy is of interest both from the biological and obstetrical standpoints. Considerable difference of opinion exists as to how twins develop in the unioval variety, but we do know that they are generally of the same sexes and that there is an anastomosis between the two vascular systems in the placenta which is not present in the fused placenta of double ovum twins. Ordinarily the development of both fetuses is the same, although one may be somewhat larger than the other. Occasionally, however, one fetus is so much larger and stronger than the other that it crowds the two fetuses to such an extent that the latter becomes flattened out and assumes the character of a fetus papyraceus. In other instances the heart of one embryo is so much stronger than that of the other that it monopolizes the gradually increasing area of the common placenta. As the other fetus receives less and less blood it fails to develop and a mere remnant is left to which the name *acardia* is given. Then again we have a *hydramnios* in the case of the larger fetus supposedly due to the fact that the stronger heart appropriates the largest share of the blood with a corresponding hypertrophy of kidney function.

In the case herewith reported variations from these general rules are to be seen. Although the first fetus was normal and larger than the second, the contents of its amniotic sac were quite normal in amount; whereas the smaller and abnormal fetus developed in an amniotic sac that contained at least a gallon of fluid at the time of delivery. Although evidently of bioval origin, judging from the development of the placenta and membranes, both twins were of the same sex. Another feature of interest in this connection is that with this type of twin pregnancy no anastomosis between the placenta could have been present. For this reason also the development of the second twin could not have been interfered with by the growth of the first.

In none of the obstetrical text-books which were consulted was any record of a similar anomaly found, and it is for this reason that the case is presented.

DR. ALFRED M. HELLMAN presented a report on

TYRAMIN IN LABOR, WITH REPORT OF CASES.

In an article on "Tyramin as an Adjunct to Morphine in Labor" (*Journal of the American Medical Association*, September 15, 1917) Professor Barbour of the Department of Pharmacology of Yale University states: "The employment of tyramin-Roche in effective doses as an adjunct to morphine is now under investigation by Dr. E. L. Deming on carefully selected cases of normal labor in the obstetrical clinic of Dr. Slemmons at Yale. The number of cases thus far has been too few to justify broad statements. It may, however, be said that the laboratory data are being well correlated. The dosage employed is 16 milligrams of morphine sulphate given hypodermically in solution with 40 milligrams of tyramin. In the absence of contraindications, this injection is being given when discomfort becomes marked in the first stage of labor. Analgesia appears to be as complete as though the same dose of morphine were given alone.

"The respiratory rate of the mother becomes slightly increased rather than decreased and usually remains somewhat accelerated throughout. The condition of the children has been quite satisfactory, no tendency to asphyxia having been observed. In every case the frequency of the uterine contractions has been increased within five minutes after the injection and this augmented activity remained throughout. The increase has usually been from five-minute intervals to intervals of about two minutes with an augmentation, temporarily at least, in the strength of the individual contractions. Forty milligrams of tyramin produce a temporary rise in blood pressure usually amounting to 20 to 25 mm. This seems to be negligible in normal cases, but should be borne in mind and followed closely."

This statement from so eminent a source aroused my interest in this drug, and through the kindness of the manufacturers I obtained sufficient for nine doses, and administered it during October to nine patients on the service of Dr. Seeligmann at Lebanon Hospital. Eight times it was given with morphine when this drug was indicated, the dosage corresponding with that suggested by Barbour. Once it was given alone just to see what its effect would be.

A review of the literature brings out the following:

Tyramin is a synthetic preparation, parahydroxyphenyl ethylamin hydrochloride. Systogen, uteramin, tenosin, ergotamin, are all probably the same drug under different trade names.

Laboratory workers have called attention to it as a respiratory stimulant, especially Bry; whereas Maurer and Von Glahn noted that it counteracted the respiratory depression of morphine.

It is claimed that experimentally it causes a rise of blood pressure (Clark) which is more gradual, lasts longer and is less powerful than adrenalin, but resembling this drug. Hoyt claimed that though it often did increase blood pressure it was not dependable for that purpose.



In 1910, Dale and Dixon, from some experiments they had made deduced that besides its adrenalin-like action, it caused in rabbits contractions of the uterus and vagina, more marked if the animal was pregnant, but that it did not bring on labor.

Its oxytocic action was also noted by Guggenheim, whereas Lieb called attention to the fact that it stimulated the sympathetic nervous system and that it also stimulated the nonpregnant as well as the pregnant excised human uterine muscular tissue. Krose and Sharp found tenosin of use as an oxytocic postpartum and postabortive.

Judging from a review of the literature, one would expect to find from the use of tyramin in labor that the mother's respirations would be increased as well as the blood pressure raised; the analgesic effect of the morphine unaltered; the new-born infant unaffected; the uterine contractions stimulated until the end of labor. Unfortunately my experience does not bear out these reports.

In the eight cases in which I administered 40 milligrams of tyramin with 16 milligrams of morphine the respirations of the mother were unchanged, the blood pressure rose from 5 to 15 mm. of mercury in six cases; in one there was no change, and in the other there was a five point increase. The new-born infants were not affected. In every case the pains became decidedly less frequent and seemingly less powerful.

CASE I.—Para-ii. The pains were returning every seven minutes but soon slowed and gradually stopped altogether. The patient left the hospital to return several days later for a normal delivery.

CASE II.—Para-ii. The pains decreased from every four to every five minutes. These two cases were the only ones to complain of dizziness and dimness of vision about an hour after receiving the injection.

CASE III.—Para-ii. The pains decreased from every two and one-half to every three minutes.

CASE IV.—Para-ii. The pains decreased from every four to every five minutes.

CASE V.—Para-i. The pains decreased from every two to every three minutes.

CASE VI.—Para-ii. The pains decreased from every four to every six minutes.

CASE VII.—Para-ii. The pains decreased from every three to every four minutes.

CASE VIII.—Para-i. The pains decreased from every three to every five minutes.

Two cases came to forceps. One nonforceps baby required resuscitation, but I do not feel that the tyramin was responsible for this.

CASE IX.—Para-i. This patient, twenty-two years of age, a healthy Italian was given the tyramin without morphine when the pains were returning every three minutes. She was then fully dilated. The pains directly after the injection of the tyramin returned only every seven minutes and remained so until delivery

was accomplished without forceps. The child was entirely normal. These are the facts. I do not attempt to explain them.

Of course these nine cases are not enough to allow of a definite conclusion; it will take many more observations to decide the value of this drug. To me the results were quite a surprise. I can merely say that in my hands the drug was not satisfactory.

Dr. HELLMAN also reported

### THREE CASES OF UNRUPTURED ECTOPIC PREGNANCY.

CASE I.—This woman was thirty years of age and had been married ten months. She began to menstruate at the age of sixteen. The menses were regular, of the 28-day type, lasting eight days, the first day being painful. She was admitted to the Lebanon Hospital, on September 15th, with the history of having had pain in the lower abdomen and back for fourteen days prior to admission. Slight bleeding was noted on urination, but no other symptoms. Physical examination revealed tenderness on both sides low down. The right ovary was slightly enlarged and slightly tender. The uterus was normal, anteflexed but not enlarged. The treatment administered consisted in rest, douches and ergot. On September 18th, at 12.30 P. M., the patient's symptoms were unchanged. An enlargement of the right tube was made out. Laparotomy was performed at 4.00 P. M. and a small unruptured tube found. There was an enlarged cystic ovary on the right side. The left adnexa were normal. A very much inflamed appendix was removed. Recovery was uneventful.

CASE II.—This patient, a woman thirty-five years of age, was seen in consultation with Dr. Lobell, who had already made the diagnosis on the evening of October 8, 1917. She had been married eight and one-half years and had five or six miscarriages and three curettages. Her menses had started at the age of fourteen years and were of the 28-day type, lasting three or four days and without pain. The last period was two months previous and was a week late. She had been bleeding ever since and complained of recurring pain on the left side and pain on urination and when her bowels moved. There was no fainting. Physical examination showed the patient of good color, pulse slow, cervix enlarged and congested, with bleeding from the os. The uterus was slightly enlarged and retroverted. There was an indefinite sense of mass on the left side, and tenderness on both sides, but worse on the left side. There was a small cystic ovary on the right side. The following day the left tube and left cystic ovary were removed. Two small cysts were punctured and sutured. Recovery was uneventful.

CASE III.—This patient was twenty-five years of age, single, but admitted intercourse. She was admitted to Dr. Seeligmann's service at Lebanon Hospital on the night of October 13th. Her menses had started at the age of fifteen and were of the regular 28-day type, lasting five days and painful during the first day. She began bleeding on September 25th, nine days late. Since that time

bleeding had been continuous with occasional blood clots. There had been recurring sharp, stabbing pains in the lower abdomen. A diagnosis of ectopic pregnancy was made by the house staff. Physical examination showed that the patient was not pale; the pulse was 100 to 110, and there was a peritonitis over the lower abdomen. Bimanual examination without an anesthetic was valueless. Although Dr. Hellman tried to postpone the operation the patient suffered such intense pain that he feared to delay it. Upon opening the abdomen he found free blood in the abdominal cavity and an unusual amount of plastic peritonitis. The left tube was removed and also a small fibroid. The patient made an uneventful recovery.

These three cases are reported not because they are unusual, for they gave quite typical histories and symptoms, if there is such a thing as a typical picture of ectopic gestation, but because it is rather unusual for one man to see three such cases within the brief period of three weeks.

DR. JAMES A. CORSCADEN (by invitation) read a paper entitled:

THE RATIONAL USE OF THE X-RAY AND RADIUM IN UTERINE  
HEMORRHAGE.\*

DISCUSSION.

DR. S. STERN.—Dr. Corscaden has presented the subject in a very practical way. Having taken up the treatment of uterine hemorrhage and of fibroids by radiotherapy about seven years ago, since that time I have treated in hospital and private practice several hundred cases ranging in age from fourteen to sixty years. The results have been just as Dr. Corscaden said, there is absolutely no question that we can produce one amenorrhea in any patient if we only give a sufficiently large dose.

I had one case in a young girl, fourteen years of age, which was very interesting. She had begun to menstruate about one year before and it simply kept up. She had been curetted several times without result. She was very anemic and it was thought that a hysterectomy would have to be done unless radiotherapy could stop the bleeding. The bleeding stopped as the result of the treatment and she ceased to menstruate for about a year, then menstruation began again and the patient has been menstruating normally since. At present she is about nineteen years old and appears to be perfectly well. I have had a number of cases in young women in which amenorrhea followed the treatment lasting up to two years and then menstruation began again. In some instances these women have later become pregnant and have had perfectly healthy babies, and they are perfectly healthy to-day and have had no recurrence of the fibroid or of the hemorrhage.

The only difficulty in connection with this treatment is to know how to gauge the dosage and I believe the time will come when we

\* For original article see page 250.



will be able to work out a definite formula and following this get identical results. There is no question that we occasionally get young girls who should be treated radiotherapeutically. Sometimes we succeed so well that we wish we hadn't. I had one girl who menstruated very profusely; she was curetted a few times without result and we decided that something more radical would have to be done. As radiotherapy appeared to be the easiest way of treating her we employed it. This treatment was successful in stopping the hemorrhage. She has been amenorrheic now for a year and a half, much to her mental distress, and now she is making my life miserable, wanting to know when she will menstruate again. I have never seen a case, however, under thirty years of age that did not menstruate again and I have no doubt that ultimately this young woman will also menstruate again.

In older women the question of dosage depends upon how near the menopause they are.

As for the interesting question how the radiotherapy does the work; at one time it was thought that the results were obtained entirely through a reflex action produced on the ovaries, but I think there is a decided action upon the fibroid tissue itself. A case in which this was well illustrated was a patient sixty years of age with a large fibroid which reached above the umbilicus. She had about 5 per cent. sugar in her urine and she was considered inoperable, so we decided to treat her radiotherapeutically. She had passed the menopause some ten years ago and of course her ovaries were pretty well atrophied. Of course in this case it was amazing to see how the fibroid mass shrank under *x*-ray treatment. After the patient had received four or five treatments the mass was just a little above the symphysis. In this case the ovaries certainly had very little to do with the result. In another case the patient was operated upon for an ovarian cyst and one ovary was removed. The patient was then operated on four or five times. The last time she behaved so badly that it was decided not to operate on her again. She developed a large fibroid which finally required some kind of treatment so she was treated radiotherapeutically. The result in this case was just as prompt as in patients who had both ovaries. The prompt response of this patient, considering the fact that she had one ovary removed make it seem that the action of the radiant energy must have been on the fibroid itself.

There are not many contraindications if we can rule out malignancy. This is sometimes very difficult and some mistakes might be made. In about 300 cases coming under my observation there was only one which proved later to be carcinoma. In this case there was some suspicion of malignancy from the beginning, but the patient was very reluctant to undergo an operation. If there are any other instances in which malignancy developed I have lost track of them.

As to recurrences of hemorrhage after this treatment in patients treated near the menopause, the amenorrhea produced is generally permanent; in younger women it produces an amenorrhea which lasts for about a year or more, then menstruation begins again, usually in a perfectly normal way.



I do not know why Dr. Corscaden takes the age of thirty-eight years and says that when the patient is under thirty-eight he prefers a surgical procedure. I believe that if they can be operated on in such a way that enough of the uterine organ can be preserved to keep up menstruation, it is probably better than to take the chance of possibly making them permanently amenorrheic. But otherwise I think that radiotherapy which is likely to produce only a temporary amenorrhea is better than a procedure which surely makes them permanently amenorrheic.

DR. L. T. LEWALD.—The findings of Dr. Corscaden are in agreement with those of Dr. Pfahler and I am inclined to believe that his procedure is correct. His selection of cases follows that of Dr. Pfahler's and others who are working successfully along these lines.

DR. HOWARD C. TAYLOR.—There is very little in which I would not agree with what Dr. Corscaden has said. I wish he had told us more about the size of the dosage especially of radium. "A moderate dose," "a small dose," "a large dose" does not carry much meaning and leaves us still in the dark as to the exact dosage. The literature contains much regarding the results of the use of radium but little regarding the exact dosage, amount of filtration and the duration of the application.

The vast majority of uterine hemorrhages can be cured by curettage. If one takes all those due to metritis, retroversion, fibroid or conditions of the appendages, I usually prefer to do a curettage and such other operation as may be indicated, rather than to use radium or the x-ray. If a young girl flows profusely and no real lesion is found in the pelvis it is my custom to regulate her life, her exercise and rest and general hygiene. I dislike to curet a young girl but I would curet her rather than use radium though I certainly would use radium before I would do a hysterectomy. I would not use the radium until a curettage had failed more than once.

I am not clear in my own mind regarding the effect of radium and x-rays on the ovaries. In one of the cases just reported a young girl did not menstruate for two years and then menstruated and became pregnant, but this does not prove that a woman is as likely to become pregnant after an application of radium or of x-rays as if she never had had the treatment. It seems that if the radium acts upon the Graafian follicle sufficiently to stop menstruation for a couple of years, it is at least possible that the Graafian follicle may be permanently injured and for this reason I would hesitate to use radium in a young woman who was likely to become pregnant again. I have used radium in women in the child-bearing period but I prefer not to do so if the case can be cured by operation excepting in special instances. In the treatment of fibroids I think it is not a question of whether a woman is thirty-eight years of age or forty-four years of age, but the question is whether she needs her uterus or not. A woman may be forty or forty-one years of age and just married and in that case she does not wish to remain sterile but wishes to feel that she has a chance of becoming pregnant. On the other hand, if a woman is under thirty-eight years of age and has had

children and does not care to have any more she has less need for her uterus and it is of less importance to save it. I am very much in favor of myomectomy if the woman needs her uterus and wants a chance of having children. One can do an extensive myomectomy with safety without rendering the woman sterile. I wish Dr. Corscaden would make some reference to his treatment of submucous fibroids. If one-half or three-fourths of the tumor extends into the cavity of the uterus what is the effect of radium on the fibroma?

DR. HIRAM N. VINEBERG.—I think Dr. Corscaden has given us a very fair presentation of this subject and has furnished a standard upon which we can look as a guide in the future in our own cases. I think Dr. Taylor struck the keynote. If one starts out with the idea of doing myomectomy, it is surprising how few cases there are in which one cannot do this operation and we can thus save a great many uteri.

As to the submucous fibroids—those who have operated on this kind of growths know how easily one can shell them out. I have had several cases with very large submucous fibroids in which I have opened the abdomen and found it easy to shell out the submucous fibroids, and furthermore these women have afterward borne children. I have had very little experience with either the x-ray or radium but I think that every gynecologist should be familiar with these methods of treatment and should avail himself of them in some cases.

As to the young girls, I had one case in a young girl who had been curetted several times and this procedure had failed to control the hemorrhage and she was in a desperate condition. She was a girl who had to earn her living and it was imperative that something should be done. I decided to open her abdomen and on doing so found that one ovary was double the normal size. I simply incised this ovary. It is now nine months since this was done and the patient has had no more hemorrhage and is in good health.

DR. HERMANN GRAD.—The gynecologist is ready to learn from the radiologist about uterine fibroids and uterine hemorrhages and I think this paper is very fair and very instructive. I have had three experiences with cases that have come back from the radiologist after they had been treated. These cases were of three distinct types. The first was a woman who was treated for uterine hemorrhage for four months and the radiologist sent her back because he feared malignancy, although there was nothing demonstrable upon microscopical examination of the curetings. Hysterectomy was done, and the specimen showed a fibrosis of the uterus and an extremely marked endarteritis. In the myometrium there were very peculiar changes which the pathologist stated he had never seen before, and there appeared to be a great deal of scar tissue. The ovarian structures also showed changes under the microscope; one could not demonstrate Graffian follicles at all. In this case the x-ray treatments did not control the bleeding from the uterus.

In another case, a young woman who was treated for about six weeks, the hemorrhage was not being controlled. The case was

treated for a fibroid, but on opening the abdomen it was found that she had a pyosalpinx on both sides, and no fibroid. This brings up the question of diagnosis. The differential diagnosis is at times quite difficult.

In another case of submucous polyp the hemorrhage was not controlled by the *x*-ray. In this case there had been a sufficient number of exposures to have controlled the hemorrhage, but this did not happen. At operation a polyp was found. Here again there was a question of diagnosis.

DR. HARRY ARANOW.—My experience has been just the opposite of that of Dr. Grad. A woman came to the Presbyterian Hospital Dispensary suffering from metrorrhagia due to a fibroid tumor. She was in a desperate condition. She was treated and improved. About a year later she began to bleed again and was curetted. She had been given serum to control the bleeding. Finally treatment with the *x*-ray was effective in controlling the hemorrhage in this case. I have the impression that in women around the age of thirty-eight or forty years the *x*-ray is more effective than in younger women in controlling hemorrhage due to fibroids.

I had a case with a fibroid tumor on the right side of the uterus and she had been under treatment for metrorrhagia for a long time without receiving much benefit. Under *x*-ray treatment she made an absolute recovery. I saw her a short time ago and the uterus was smaller than normal and the tumor had disappeared.

In the case of a young girl about seventeen years of age in which I was called in consultation and whom I found ghastly pale and anemic, the question came up whether she should be curetted and packed again or treated with *x*-ray. As she continued to bleed in spite of the curettage and packing (she had been curetted six times) it was decided to try the *x*-ray treatment. She was under treatment for three or four weeks. She then became amenorrheic for eight or nine months, when she began to menstruate again and is now absolutely normal.

DR. CORSCADEN, in closing, said: Regarding the suitable age, namely thirty-eight years, that as Dr. Taylor says, is very much on the defensive. We simply took that age because it represented about the average of a number of cases taken from the literature. That is about the age at which the conditions laid down by Taylor more often occur and it is the age at which the majority of women cease to want to have children. My original reason for selecting this age was because at and after this time one does not need to have much fear on account of the menopause symptoms. I have seen these evidences of the menopause in young girls and found that they were largely psychic, although hot flushes were always present. They may be severe but in such cases a little persuasion will enable the patient to overcome them.

As to the *x*-ray dosage and what we mean by massive doses. The abdomen is divided into ten areas and each area is given an erythematous dose, that is a dose just short of what would burn the skin and this dose is repeated as soon as is convenient. Then a second



similar series of treatments is given three weeks later, and a third again three weeks after this. No one really knows what a massive dose of radium is for a case of metrorrhagia or menorrhagia, but a limit has been set to the dose in carcinoma. More than 3600 milligram hours is likely to produce a fistula formation. I have applied 25 milligrams for twenty-four hours, 50 milligrams for twelve hours and 50 milligrams for twenty-four hours, and in each instance the result has been about the same, except that when one puts in 50 milligrams for twenty-four hours the primary period is less profuse, but there were the same number of periods and the amenorrhea is just as complete. With reference to the question of endometritis, I have followed the classification of Hitschmann and Adler. Busse has collected 360 cases of menorrhagia and metrorrhagia in which curettage was used with 10 per cent. positive results, so that it would seem that one gets poorer results after menorrhagia and metrorrhagia. The results of curettage have been the same with us. I do not know how to explain these cases unless it is because those that I failed to cure came back to me and those that I succeeded in curing went somewhere else.

As to the measurement of the fibroids, that was done by means of the ordinary obstetrical calipers with one straight arm. The straight arm was held between the middle and first fingers in the vagina and the upper arm was placed on the abdomen and moved about until the greatest diameter of the fibroid was encountered. The upper arm was squeezed down until the fibroid could be well felt. A discount was made for the thickness of the abdominal wall and the same discount was made at each subsequent examination.

The question of children being born is an important one. Thus far no patient that I have treated in this way has had a child. Up to two years ago I was afraid of taking a chance of giving radiotherapy to a young girl for fear of injuring the ovum so that it might result in the production of a monster. There are numerous instances recorded in the literature in which children have been born subsequent to this treatment and no abnormalities have been recorded. Reifferscheid tried to find out what happened to the Graafian follicle as a result of radiotherapy, and while to my mind his conclusions are rather hard to follow, he claims that the Graafian follicle if injured is destroyed, so that there could be no pregnancy but that a Graafian follicle which came to maturity subsequently would be normal.

The question of giving the treatment in younger women is a most difficult one to decide. I certainly favor a myomectomy if there is a reasonable prospect of a subsequent pregnancy. The statistics at the Presbyterian Hospital show 5 per cent. of pregnancies following myomectomy. This did not take in selected cases only but both those that should and those that should not have been subjected to this procedure.

In failures to get results with the *x*-ray treatment I should like to see the apparatus and all the measurements of the *x*-ray dose. Giving *x*-ray is like giving digitalis, we must know the proper method



of administering it. If we do not know all the factors bearing on the *x*-ray dose it is just as useless to attempt to employ it as it is to give a man a handful of strychnine tablets and tell him to use them when he feels he needs them.

We did not treat any polyps with radiotherapy, but they have been quoted in the literature as being resistant to treatment, as have also other pedunculated growths. It is my custom to do a preliminary curettage and then if a fibroid is present we learn what condition obtains in the cavity, and if we think operative interference is indicated because of a polyp or pedunculated fibroid I operate, so you see, in a way, I am working from both sides of this question.

DR. TAYLOR.—If when you curette the patient you find a fibroid or perhaps four or five fibroids extending out into the uterine cavity what do you do? Do you give the radium and does it cause submucous fibroids to disappear?

DR. CORSCADEN.—Yes, I give the radium and I find that the fibroids disappear. I believe the disappearance is due to the effect of the treatment on the ovary. Dr. Wood has been experimenting with the chick's heart to find what the effect of radiotherapy is on smooth muscle. The smooth muscle is extremely resistant to the action of radium. Whether the smooth muscle of a fibromyoma is different from the normal smooth muscle of the uterus I do not know. However, these fibromyoma shrink faster after the radium treatment than those do that go through the natural menopause and as was cited by Dr. Stern in one of the cases, a fibroid disappeared under radium treatment in a woman who had some years previously passed the menopause. A series of such cases would be very suggestive.

DR. HOWARD E. LINDEMAN.—In our earlier treatment of fibromyoma we used to castrate in order to cure the patient. Some fibroids diminished in size by this treatment but many others did not and it is this fact that suggests to my mind the possibility that the *x*-ray and radium have some direct effect on the fibroid itself and do not exert their action merely through their effect on the ovary.

DR. CORSCADEN.—Gaus, Kroenig, Albers Schoenberg, and indeed all the German authorities on this subject, agree that the cases in which there has been a failure to reduce the fibroid after radiotherapy have been those in which menstruation has recurred and therefore all the German authorities insist that in order to make the fibroid disappear menstruation must cease.

## TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF PHILADELPHIA

*Meeting of October 4, 1917.*

*The President, DR. FRANK C. HAMMOND, in the Chair.*

DR. J. W. KENNEDY read a paper on

THE PATHOLOGY AND SURGICAL TREATMENT OF GONORRHEAL INFECTION OF THE PELVIC ORGANS.\*

### DISCUSSION.

DR. STEPHEN E. TRACY.—I am sorry Dr. Kennedy did not have time to tell us more about his treatment for gonorrheal infection of the pelvic organs. In cases of acute gonorrheal infection a curetment is decidedly out of order. If the tubes are not involved, they probably will be after a curetment. The endometritis in these cases practically always cures itself. Uteri removed for chronic gonorrheal infections of the tubes seldom show an endometritis. Cases of endometritis *per se* are few and far between and I agree with Dr. Kennedy that a curetment is seldom necessary for such a condition. Many patients who have a simple curetment either do not need the operation or require something more radical. I also agree with Dr. Kennedy that if a viscus is ruptured, immediate operation is imperative. I do not believe, however, that all cases of appendicitis should be operated on when seen nor do I believe that the appendix should be removed in all cases. It is much better to drain an appendiceal abscess, even if the patient goes elsewhere at a subsequent time to have the organ removed, than to run the risk of peritonitis by removing the appendix at the time the abscess is drained. Inflammatory conditions of the pelvis can certainly be operated on with a lower mortality and in a more conservative manner, if allowed to wait until the disease becomes chronic.

DR. F. HURST MAIER.—I believe that the majority of us are in accord with Dr. Kennedy's views on the treatment of acute general suppurative peritonitis. Acute pelvic peritonitis, however, is quite a different problem. In it the infection is localized and one can delay surgical treatment until the acute process has subsided. At the most, when a pus collection becomes threatening, vaginal incision and drainage can be resorted to without danger. Were we to attack these cases from above during the acute or subacute stages of the disease, organs that might otherwise be saved would be sacrificed and in septic infections, it would be attended by large loss of life.

\* For original article see page 282.

In gonorrheal infections I believe in being conservative during the reproductive years. Often times persistent treatment is rewarded by a clinical if not anatomical cure in apparently hopeless cases. Should the pathology, however, require surgical relief then I believe in being radical. Tubes, ovaries, and uterus should be removed. To allow the latter to remain in whole or in part leaves behind sources of infection from which the uterus and lower genital tract may subsequently undergo reinfection.

DR. RICHARD C. NORRIS.—I think our modern knowledge, acquired from the experience of many surgeons, has taught us that the character of the infection and its location in the individual case, have much to do with the time of the operation. This was referred to by Dr. Maier. I know that the fearless surgeon who would rush into a pelvic case of puerperal origin and operate immediately would very often spread peritonitis. In gonorrheal infection conditions are very different from that with the colon bacillus and streptococcus. Our experience has taught us that we must not rush in and open a woman's abdomen unadvisedly. The "toilet" is almost a word of the past in abdominal surgery. We do not drain as frequently in pelvic surgery as we used to; we do not have to. Our technic of handling operations is different. In discussing the time to operate we should differentiate our cases into the groups to which they belong. One thought which may be crystallized from our gynecological experience as the years have passed is that the dictum taught us by Dr. Price concerning drainage and toilet, now is, in large part, unnecessary. Our method of procedure in pelvic hemostasis is entirely different at the present from his technic. I think Dr. Price appreciated that himself. His value to gynecology as a pioneer was unmistakable; he taught us much of what we knew in the early days, but we passed beyond his knowledge as time went on. We do not have to eviscerate patients as he did; this only adds to mortality. Our patients are now sometimes opened and drained with the understanding on the part of the surgeon that in some cases it may be necessary to do another operation. It is no discredit to the surgeon if such a patient falls into another surgeon's hands. I feel that there is no hard and fixed rule in surgery. We must know the character, duration and location of the infection. Dr. Kennedy wants to make it very easy for us but the problem is a hard one.

DR. KENNEDY, closing.—I can only say that the teaching in this subject is as stated and the results are as bad as I have indicated, and will never be better as long as the profession continues to classify these rapidly fatal conditions into operative and nonoperative stages. Puerperal infection cannot be classified as a perforative and pus-forming lesion whose extension is that of a peritonitis; therefore, it does not come under the head of those perforative lesions which I believe should be subjected to operative intervention irrespective of the stage of the complicating peritonitis.

Puerperal infection, being a wound lesion, is not confined within the limits or protective elements of either serous or mucous membranes and has little tendency to localization; it is infiltrating in its extension and is therefore little amenable to amputation surgery.

I only operate on the puerperal patient in the acute condition when forced to by a bowel obstruction or in the chronic or subacute cases in which there may be some localization or extensive infected thrombi in the vessels. If forced to operate in the acute puerperal condition, I do no amputation surgery but simply enclose the entire pelvic viscera in a cofferdam of gauze.

To sum up my views of gonorrheal infection from an operative standpoint: If the condition does not subside after a two weeks' rest in bed and returns for further treatment, I consider this patient surgical at the first hour thereafter. I do not believe in conservative treatment by partial or one-sided amputation of the gonorrheal uterine appendages. I never do vaginal puncture for reasons already given, as the patient is not too ill for radical surgery on account of the local condition in the pelvis which might be drained by vaginal puncture, but is ill on account of the superimposed bowel obstruction and the macerated viscera in the infected area, which profoundly indicates suprapubic work. In not over 10 per cent. of cases do I remove the uterus for gonorrheal infection of the tubes and ovaries. I always remove the entire tube by taking a small V from the uterus at its tubal junction.

Before closing I want to pay tribute to Dr. Richard Norris for his excellent monograph on this subject, and I would be remiss indeed if I did not memorialize my late beloved master Dr. Joseph Price who taught us most we know about this subject and modernized it early in his professional career.

DR. HARRY A. DUNCAN read a paper on

THE PATHOLOGY AND TREATMENT OF PERITONEAL AND PELVIC  
TUBERCULOSIS.\*

DISCUSSION.

DR. LAWRENCE F. FLICK.—I agree with the reader of the paper that general treatment should be carried out before surgery is resorted to. The treatment which applies in tuberculosis of the lungs would also apply to the treatment of tuberculosis in other parts of the body. Whatever builds up and improves the blood cells will bring about a cure. I am inclined to think that in some of the miraculous cases of operation, the stimulation of the absorption of the serum has much to do with the results. Absorption of a large amount of serum whether from the peritoneum or from other serous cavities undoubtedly has a very beneficial effect in tuberculosis. I have long since looked upon the absorption of serum, in the pleural cavity for instance, when there is a very extensive effusion, as a very effectual remedy in the treatment of tuberculosis. It is possible here to bring about a very rapid absorption. I have also known of cases of extensive tuberculosis of the lungs getting well after an operation upon the peritoneum. In these cases I am inclined to

\* For original article see page 288.



think that the benefit derived from the operation and the influence upon the lung condition have been largely due to factor mentioned.

DRS. CHARLES C. NORRIS (by invitation) and H. R. M. LANDIS, read a paper on

PREGNANCY AND TUBERCULOSIS, WITH REPORT OF CASES.\*

A summary of the authors' conclusions is as follows:

I. The combination of pregnancy and pulmonary tuberculosis is a frequent one.

II. Pulmonary tuberculosis exerts little or no influence against conception.

III. Pulmonary tuberculosis exerts but little influence on the course of pregnancy and, except in the advanced stages exerts little or no influence toward causing abortion, miscarriage, or premature labor.

IV. About 20 per cent. of mild, quiescent pulmonary tuberculosis and 70 per cent. of more advanced cases exhibit exacerbations during pregnancy or the puerperium.

V. Marriage is worse for tuberculous women than for tuberculous men owing to the dangers incident to pregnancy.

VI. Unless the pulmonary lesions have been quiescent for a moderately prolonged period, tuberculous women should not marry.

VII. Tuberculous women should not become pregnant unless the disease is in the first stage, and has been quiescent for a minimum period of two years.

VIII. It is as yet impossible to determine with certainty which cases will bear the added strain of pregnancy well and which badly. We must individualize our patients. Moderately extensive lesions, recent activity, the development of secondary lesions, especially laryngeal involvement, loss of weight, fever, hemorrhage, sweats, lack of vigor, inability to obtain proper treatment are ill omens, whereas the reverse are more favorable.

IX. Prior to the fifth month of pregnancy, the uterus should be emptied if the disease manifests any evidence of becoming active or if the lesions are extensive ones or laryngeal involvement occurs. Curettage during the first six or eight weeks, and in the latter cases, vaginal hysterectomy are as a rule the preferable methods. Interruption of pregnancy does not insure an amelioration of the pulmonary condition, but does definitely improve the prognosis. About 65 to 70 per cent. of cases, prior to the fifth month of pregnancy, will be definitely improved by emptying of the uterus as soon as acute symptoms arise, provided that proper after-treatment is carried out. Late intervention has given less satisfactory results. Sterilization is rarely justifiable.

X. After the fifth month of pregnancy, it is generally advisable to treat these patients expectantly. Labor should be made as easy

\* The original article upon which this paper is based appeared in the AMERICAN JOURNAL OF OBSTETRICS June, 1916.

as possible. For this end, induction of premature labor two weeks before term is often advisable, rarely if ever, should they be allowed to go beyond term. At labor forceps or version is usually indicated.

XI. Infants should not nurse tuberculous mothers, and should be especially guarded from infection.

XII. Hygienic and dietary treatment should be employed at all times. These patients should be kept under close observation and should be examined by a competent internist at regular and frequent intervals.

XIII. In the great majority of cases the tuberculosis precedes the pregnancy. Even in those cases in which the symptoms are first observed during pregnancy, infection has generally occurred prior to conception and an exacerbation during pregnancy has directed attention to the pulmonary condition.

XIV. We especially urge that all pregnant women giving a history at all suggestive of pulmonary tuberculosis be subjected to a thorough examination by a competent internist at the earliest possible date. Only in this way can the proper treatment be instigated at the time when it is most valuable.

XV. It is doubly important that tuberculous pregnant women shall be given the same care as the nonpregnant individual as far as rest, hygiene, diet, etc., is concerned.

#### DISCUSSION.

DR. RICHARD C. NORRIS.—My practice in these cases has been pretty much that advised by Dr. Landis. In the care of tubercular women in pregnancy it has been my plan to have them treated by an internist and to allow them, when the disease is not progressive, to go to term expecting to save the baby. Each man must formulate a policy, whether he shall end pregnancy in all cases, whether in any, or whether he shall differentiate his cases and with an internist carefully watch them. The latter method I believe to be the proper one. I think that the present tendency is to terminate pregnancy promptly when indicated, if it be an error it is to err on the side of safety. I know my mental attitude is to act more quickly than I did ten or fifteen years ago. If a woman in the early months of pregnancy is tuberculous and the disease is progressing in spite of the care of an internist I believe it wise to terminate the pregnancy in order to prolong her life, or perhaps to even arrest the disease. We must put in the balance the question whether it is better to save her for her family or to sacrifice the fetus. Each man's conscience must decide that question. Another problem is presented in the case of the woman in whom the disease is arrested, who marries and becomes pregnant. The obstetrician is frequently appealed to by the general practitioner, with his fear of tuberculosis complicating pregnancy, to terminate the pregnancy when the woman is to all intents and purposes well. I have had that situation placed before me again and again. My attitude is not to terminate the pregnancy. I have often seen women who have had sufficient

resistance under proper treatment to have the lesion cured. That very fact is evidence to my mind that they have a good chance of the pregnancy not aggravating the disease if they are carefully watched. I have had such patients under my care for whom, when others would have terminated pregnancy, my advice has been that we would wait and watch the case, having the woman under the care of an internist. In several such cases the only child would have been sacrificed if the advice of others had been followed. A woman with predisposition to tuberculosis may develop tuberculosis after the baby is born. I have had this happen in rosy-cheeked young women apparently enjoying perfect health when they entered the Preston Retreat and they have died from a rapid tuberculosis, after the baby was born developing in the early or later weeks of puerperal convalescence. It is not possible to predict this unfortunate outcome. In cases in which the tuberculosis is arrested I would allow the pregnancy to continue. If early in the pregnancy there are unmistakable signs of progress of the tuberculosis, the pregnancy should be terminated. In the latter months pregnancy has no beneficial effect upon the tuberculosis. Nursing of the infant is always interdicted. The tuberculous woman needs all the resistance she can have and she should not be allowed to nurse her child. The child also will do better not to nurse from a tuberculous mother.

The conduct of labor in these cases has been brought out by Drs. Norris and Landis. In this we want to save these women the stress and strain of labor, particularly of the second stage. The question of how soon we shall allow these women to get out of bed is an important one. There is something about the processes of the early puerperal period that requires rest under all circumstances and a certain time must be allowed for thorough recuperation; certainly a tubercular patient requires more of that rest. At the Retreat it is our custom to have such patients practically live out of doors, and we keep them in the institution at rest for a longer time than other classes of cases.

I cannot agree with Drs. Norris and Landis in their dictum not to sterilize the woman with an arrested tuberculosis. Furthermore, I believe that very many times if a woman is to have an abortion performed after the early manifestation of tuberculosis and her obstetrician and internist believe she is going to get well of her tuberculosis, it is wise to sterilize her. Suppose you do not sterilize her, she will probably become pregnant again, although her husband may have the best of intentions, and another abortion is requested; under these circumstances I believe it is a perfectly justifiable procedure to prevent future pregnancies. There are so many issues based upon the sex life of woman, particularly in her domestic relations, that these matters should be considered in connection with the management of pregnancy associated with grave systemic diseases. This is especially true of latent or early tuberculosis. Therapeutic abortion has its field of usefulness almost exclusively in tuberculosis complicating early pregnancy. In the latter months of pregnancy it rarely avails to arrest or ameliorate the disease.



Clinically therefore it rarely comes to an individual practitioner to resort to abortion often for this disease, and the responsibility for it should be shared by the internist and the obstetrician.

DR. LAWRENCE F. FLICK.—When I was a young man beginning the practice of medicine I remember that the advice was given that anemic young women in delicate health should marry in order that they might recover their strength. I believe that advice was frequently followed. It was also accepted by the medical profession at that time that pregnancy was a period during which a woman with tuberculosis might make certain steps toward her recovery. My own experience supports these old-fashioned ideas. I have repeatedly advised that abortion be not performed in tuberculous, pregnant women, and uniformly the patients have made good progress toward recovery during their pregnancy. I can recall only one case in which the pregnancy was prejudicial and in this instance the woman had a dead fetus. The woman was extremely ill and although I advised that an abortion be performed I could get no one to do it. The woman was so extremely ill that no obstetrician was willing to do the operation. This is the only case I can recall in which improvement did not occur during pregnancy. I am convinced that after confinement there is sometimes a recrudescence of tuberculosis and here I want to call attention to the fact that it is very easy to mistake an intercurrent disease for a progressive tuberculosis. A fever in a tuberculous woman which runs a course of six weeks or two months is not always a recrudescence of the tuberculous process, but it is very often an intercurrent trouble. I have long since reached the conclusion that the recrudescence which occurs after confinement, very often within six weeks, is due to a mild sepsis which frequently takes place during confinement, or is possibly due to failure on the part of the obstetrician to recognize the importance of rest such as Dr. Norris has spoken of. I think that when a tuberculous woman has been confined, it is unsafe to allow her to get out of bed under six weeks or possibly two months. It is a routine practice among men doing tuberculosis work to put a patient under treatment at complete rest for at least six weeks and sometimes for three months, and the improvement which takes place is simply marvelous.

The question of the influence of pregnancy on tuberculosis has been dealt with experimentally by at least one German investigator, Darenberg. He inoculated pregnant guinea-pigs to determine the influence of the tubercle bacilli upon the pregnancy. His conclusion was that there was not the slightest difference between the length of life of the inoculated pregnant guinea-pig and the nonpregnant one which had received the same dose of tubercle bacilli. There was, however, in those experiments evidence that the bacilli had a decided influence in producing abortion. Other laboratory experiments have shown the same results. I believe that if every pregnant woman coming under observation, whether she be in the early or advanced stage of tuberculosis, is carefully treated during her pregnancy and aseptically delivered, her chances of life, aside from



those of the life of the child, would be much better than by the termination of pregnancy. This opinion is based upon a rather large experience. Of course, we all agree that if pregnant tuberculous women are allowed to go without proper care evil results will follow. I think, however, that as conservative physicians it is our duty to try to save life, not only the life of the mother but of the child. Furthermore, that if it is possible by proper scientific treatment during the pregnancy to make the woman's chances of life even as good without abortion as by terminating pregnancy, it is our duty to follow this course.

DR. JOHN F. RODERER.—I recall some years ago delivering a tuberculous woman whose former physician wanted to terminate pregnancy. I decided not to do so and this particular woman, tuberculous then, has had since six or seven children, a beautiful family. She herself is now in perfect health. I can now recall another case, that of a woman who had tuberculosis but, who is now also in perfect health. She has also borne a large family. So far as my experience goes pregnancy does not have much influence upon tuberculosis.

DR. JOHN W. WEST.—I think we are all agreed upon the fact that it is improper that tuberculous women should bear children; to that end we advise them not to get married. I think that is sound advice. Assuming that the woman is married and that she become pregnant we have an altogether different proposition. That we should at any stage arbitrarily terminate a pregnancy in a tuberculous woman is I think a very dangerous attitude of mind. This kind of reasoning simply needs to be pushed in other channels to make us universal abortionists. We can find excuse in every other class of diseased conditions for the same procedure; so, I say it is a dangerous attitude of mind to cultivate. Personally, I have not seen in tuberculous women any very greatly unfavorable influence brought about by pregnancy. The tuberculous woman when pregnant as a rule does and should receive better care than the nontuberculous woman. By such care we are doing the best thing for that woman and also conserving the life of the child whose fate we have no moral right to decide.

DR. DANIEL LONGAKER.—Upon the obstetric management of these cases I am entirely in accord with what Dr. Norris said regarding the advisability of sterilization. The problem confronting us is to deliver these women in the easiest way possible. In a large percentage I think it is advisable to do abdominal Cesarean section, at the same time sterilizing the patient. I have done this once recently and I have had no reason to regret it.

DR. LAWRENCE F. FLICK.—I think we must all agree that there are other reasons besides pregnancy for giving advice against marriage in tuberculosis; at least, that there may be other reasons. My own practice has been to advise a tuberculous woman when she can improve her social and home conditions by marriage that she should marry. There are many reasons, however, why it may be unwise for a woman to marry aside from the question of the effects

of pregnancy on her life. One of the most potent factors in recrudescence of the disease and fatal termination is the fact that the partner gets tired of a tuberculous wife. Therefore you should give advice not to marry unless you are quite certain that the woman can improve her condition and opportunities for an easy life and good living.

DR. E. A. SCHUMANN.—I should like to become reconciled to a few of the statements made in the papers and discussion. Dr. West says that it is the consensus of opinion that tuberculous women should not marry. Dr. Flick states that pregnancy improves the condition of the tuberculous woman. These two statements are slightly at variance. I have heard Drs. West and Flick say that in their wide experience they do not recall a case in which the pregnancy influenced the tuberculosis adversely. I have heard Dr. Norris say and I have myself seen case after case in which pregnancy with an initial tuberculosis developed an acute exacerbation of the disease which went on, not only to more severe illness but to death. Death in such cases resulted both when abortion was performed and when not. Personally, I am inclined toward termination of the pregnancy in the early months when the tuberculosis is active.

DR. LANDIS, closing.—I can recall only three instances in which I felt that an active tuberculosis threatened the woman's life unless pregnancy was terminated. I do not believe we have any ground to fear that we shall become universal abortionists. I have been associated with three different obstetricians and I know their attitude is against abortion except as a last resort. If after the patient has been at complete rest in bed for two months her condition is steadily growing worse I believe we are justified in giving her a chance for her life by performing an abortion. The three cases referred to form, of course, a small series; but I recall that in college we were told that owing to the elasticity of figures we could prove or disprove anything desired. In a prenatal clinic in a tuberculosis institution naturally we get many of the cases. When we see these patients steadily going down hill we are placed in the unfortunate position alluded to in the paper. Nobody wants the patients; the maternity hospital does not want them, nor does the tuberculosis sanatorium. The result is that at the time when these women are most in need of special care they fail to receive it. This I think supports the dictum that the tuberculous woman should not marry.

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## BRIEF OF CURRENT LITERATURE.

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### OBSTETRICS.

**The Birth Rate in Havre During the War.**—Loit and Legangneux show (*Annales de gynécologie et d'obstétrique*, July-August, 1917) that while in 1913 there were 28.8 births to each 1000 residents of Havre this percentage had decreased to 17.1 in 1916. The per cent. of stillbirths has increased during the same period—from 4.43 to

5.61 per 1000 inhabitants. The death rate of infants under one year of age has risen from 17.08 per cent. of births in 1913 to 19.25 in 1916. A greater increase is shown in the death rate of the second year of life. The combined mortality of the first two years of life is 29.58 per cent. of all children born alive. This total was about threefold the percentage of deaths in protected infants, although even under legal protection (Roussel law) the mortality has increased since 1913. Upon analyzing the causes of deaths epidemic afflictions are seen to play but a small rôle, the essential factor in the increased mortality being physiological misery. The mothers are obliged to work in the factories while pregnant and the babies must be put out to nurses. Charity as usual is abused by the unworthy, while the worthy poor who are ashamed to ask aid, must go without it.

**On the Depopulation of France.**—Professor Richet's address upon this subject before the Paris Academy of Medicine last May, abstracts from which have freely appeared in medical literature is published in full in the July-August number of the *Annales de gynécologie et d'obstétrique*. The author's conception of the preventable causes of race suicide is best shown by his own conclusions. The practice of procuring abortion is becoming more and more frequent, so that the Academy should remind accoucheurs and midwives that this practice is criminal; while magistrates should be impressed with the need of refraining from all clemency in punishing abortionists. A rigorous supervision should be established upon all so-called medical establishments where this practice obtains as shown by the character of their announcements. All possible legal measures should be directed against the propaganda of birth control as carried out by periodicals, pamphlets and tracts which corrupt the public by teaching the prevention of fecundity. The cause of the lowered birth rate of France is *not* physiological insufficiency but is simply a matter of choice based on reasons of economy. Since nearly the entire nation is of this mind it can only be influenced by grants of money which will provide for the raising of a certain number of children. A sum of 1000 francs might be sufficient to protect a child from the time of conception to the end of the "first" childhood (roughly speaking up to the public school age in the United States). Such protection would diminish the proportion of miserable, weak and sickly children. Naturally under such an arrangement the well-to-do families who prefer to remain childless or to raise only one or two children would be made to support some of the offspring of the less prosperous families who are willing to bear children for their country. A tax placed upon the former would therefore be one of the measures for raising the revenue desired for the maintenance of the children necessary to bring up the birth rate.

**Influence of Labor on Brain Development of the Child.**—Reviewing the literature of this subject, A. Stein (*Jour. A. M. A.*, 1917, lxix, 334) says that prolonged, unassisted labor is responsible for much avoidable, harmful compression of the infant's skull in the birth passages during the period of labor. The damage sustained



by the child's brain and meninges often affects intellectual growth, resulting in the production of all degrees of mental impairment, from feeble-mindedness and imbecility to absolute idiocy. The connection between obstetric traumatism and nervous disease in the widest sense of the term has not received sufficient consideration in the past, on account of the nonexistence of a systematic coöperation between maternity hospitals and institutions for feeble-minded children. The obstetric forceps, correctly applied, are a beneficent weapon against the abnormally prolonged passage of the child's head through the pelvic canal. Pituitary solution in small doses (from 2 to 3 minims) hastens the course of labor in many cases, rendering the application of the forceps unnecessary and safeguarding the contents of the infant's skull.

**Placental Transmission: Total Creatinine in Plasma, Whole Blood and Corpuscles of Mother and Fetus.**—In a former study of the placental transmission of creatinine and creatine, E. D. Plass (*Johns Hopk. Hosp. Bull.*, 1917, xxviii, 297) found that the maternal and fetal plasmas or sera have the same concentrations of these two substances, but that the whole bloods show the same definite relationship only in the preformed creatinine, whereas the total creatinine and subtracted creatine values are higher in the fetal bloods. This work has been repeated, a different analytical procedure being employed. No definite relationship has been shown to exist between the maternal and fetal whole bloods in a given case, but the plasma values in both series of experiments agree closely, indicating a direct diffusion of the creatinine bodies through the placenta. In the parturient woman and in the new-born child there is usually an increased ability of the red blood cells to store creatine. In spite of the reported lower creatine content of fetal tissues, the maternal corpuscles do not always show a higher creatine content than the fetal cells.

**Care of the Feet in Pregnancy.**—Referring to the common occurrence of flat-foot in pregnancy and the puerperium, G. Gellhorn (*Med. Rec.*, 1917, xcii, 326) favors immediate and persistent strapping of the feet as soon as complaint of pain is made, use of proper shoes and regular exercises to develop the plantar muscles, tibialis posticus and anticus.

#### GYNECOLOGY AND ABDOMINAL SURGERY.

**Effects of Radium on Tissue Growth in Vitro.**—The observations of F. Prince (*Jour. Cancer Research*, 1917, ii, 107) were made upon the embryo chick heart and mouse sarcoma and carcinoma. He found that radium in sufficiently large doses will so injure the nucleus of the cell as to prevent further mitosis. This injury to the mitotic power of the cell does not, however, prevent a marked increase in the area of the culture due to an outwandering of cells. This power of the radiumized cells to wander out from the main tissue is limited, extending through two or at most three generations. When there is a marked outwandering of cells after radiumization, but no mitosis,



the tissue will not grow when inoculated into mice. Radium does not, therefore, kill the cells outright, as is shown by the persistence of beating in heart muscle cells, but injures the nucleus in such a manner as to prevent further division, which must eventually result in the death of the cell, if its energy is expended in growth and division and not in a purely mechanical function. The well-known high resistance to radium of the cells of the central nervous system, which do not divide in adult life, is presumably correlated with the survival of the heart muscle cells after lethal exposures. The stimulating effects of minimal doses of radium are shown by the profuse outwandering of the cells which occurs after sublethal exposures.

**Evolution of Cancer of the Breast.**—P. Syms (*Jour. A. M. A.*, 1917, lxi, 454) asks whether, if sufficient investigation will prove that cancer of the breast does not occur without chronic cystic mastitis, we shall not have strong support for the hypothesis that cancer of the breast is caused by some form of irritation which first results in chronic cystic mastitis, and which finally results in cancer by a form of transition from one stage to another until the final stage of infiltrative cellular hyperplasia, which is cancer. With this in view he urges practitioners to examine not only the tumor but also the whole breast in the future, and to publish their findings. We can throw much needed light on this important question. If we can prove that cancer develops by a process of evolution, and if we can learn just what are the precancerous stages, we can certainly apply that knowledge for the prevention of cancer. Curing or removing precancerous conditions will, of course, prevent the development of cancer.

**Postoperative Tympanites.**—J. D. Malcolm (*Proc. Roy. Soc. Med., Sect. Obst. and Gyn.*, 1917, x, 140) claims that by making a fistula in the cecum or in some other part of the intestine in suitable cases in the course of an operation, the mortality from abdominal surgery may be reduced by a case here and there, and that patients whose lives may be saved in this way are generally suffering from an intestinal obstruction, brought about by a disturbance of coördination between the muscular activity of the different parts of the alimentary canal, aggravated perhaps by mechanical, physiological, or therapeutic hindrances to the flow of the intestinal contents, the colon being the part in which difficulty most frequently arises. He has made a fistula in twelve cases for the prevention or cure of a postoperative tympanites in a series of 1000 consecutive operations involving the peritoneal cavity. In 554 cases the disease was in the female pelvic organs, the mortality of these being 252 per cent., and the death rate was 3.8 per cent. for all the cases. This would have been at least 4.2 per cent. if postoperative tympanites had never been treated by making a fistula, for life was certainly saved in four of the cases when the patients were beyond all hope of recovering without this method.

## REVIEW.

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ROENTGEN TECHNIC. By NORMAN C. PRINCE, M. D., Attending Roentgenologist to the Omaha Free Dental Dispensary for Children; Associate Roentgenologist to the Douglas County Hospital, Bishop Clarkson Memorial Hospital, St. Joseph's Hospital, and Ford Hospital, Omaha, Neb. With 71 Illustrations. C. V. Mosby Company, St. Louis, 1917.

This book is written for the general practitioner, "who has seen fit to install *x*-ray equipment," is well worth reading by him and also by other practitioners who request *x*-ray information so that they may understand that there are various methods of getting information on a single part of the body.

The book deals exclusively with technic and after a preliminary chapter on the physics of the *x*-ray, on the florescent screen, the *x*-ray tube, the operation of the *x*-ray machine and the general principles of the radiographic examination, takes up what is the essential part of the book. In this chapter is given for each part of the skeleton, body cavities and organs, a detailed and systematic outline of procedure indicating the size of plate to be used, the opening in the diaphragm, the position of the patient and of the tube, the varieties of the photographic plates, the number of exposures necessary, the spark gap, the milli-amperage, the distance, and the time of the exposure. Nearly every position is illustrated by photographs. The explanation of gastrointestinal and urological work is elaborated.

Special chapters are devoted to radiography of injected sinuses and the localization of foreign bodies by triangulation.

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## ITEM.

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The Annual Meeting of the American Gynecological Society will be held this year at Philadelphia, Pa., on May 16, 17, 18. Dr. Geo. Gray Ward, Jr., Secretary, 71 West 50th Street, New York City.

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## ERRATA.

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December, 1917, issue, page 898, line 17, article by Dr. R. Worrall on the "Technique of Total Hysterectomy, etc.," should read 141 instead of 125 operations.

January, 1918, issue, page 61, line 7, article by Ross McPherson on the "Conservative Treatment of Eclampsia," should read, "children still-born in the series was 19, or 34 per cent."

# DEPARTMENT OF PEDIATRICS.

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## TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

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### SECTION ON PEDIATRICS.

*Stated Meeting, December 13, 1917.*

DR. ROGER H. DENNETT, *in the Chair.*

DR. HAVEN EMERSON, Commissioner of Health, New York City, gave a talk on

### NEW PLANS FOR HEALTH CENTERS.

It was the suggestion of your chairman that a brief statement of the object and principles of the new plans for the establishment of health centers would be interesting to the Section. I am here to set forth the objects that seem possible of attainment under this new plan of health administration and to describe the principles of organization upon which it is based.

Any one who attempts to analyze the results of health organization as set forth in the reports of the Bureaus of the Department of Health will be struck by the fact that no officer of the Department is familiar with all the needs and phases of civic health work, in any given borough or district of the city. The general death-rate, the infant mortality rate, the rates of incidence of the different communicable diseases in the community as a whole, are known to the Health Department, but as soon as one comes to analyze these rates, he finds that he is dealing with too large groups to make these statistics applicable to any one district. The attempt has been made to analyze these statistics so that they could be applied to local racial groups, to industrial groups, or to areas where especially favorable or unfavorable sanitary conditions prevail, and the results have not been satisfactory.

For many years the most striking characteristic of the bureau system of administration of the Health Department has been the growth of a series of kingdoms, within an empire, each to a great extent independent and with its functions and sphere of influence sharply defined, each bureau served by a staff of employees more or less specially trained and independent of the other bureaus, in thought, action and method of work. For instance, the bureaus of Preventable Diseases, Child Hygiene, Food and Drugs and the Sani-

tary Bureau, were and are entirely distinct from each other as far as concerns field areas or administrative districts, the keeping of records, estimation of needs and results of work, and there was no opportunity or desire for conference or comparison for the sake of obtaining joint action, based on a joint diagnosis of conditions requiring remedy. There was no way of correlating the data to show the defects of the methods of administration in any particular district. There was no place in the city where investigation was being carried on in respect to the effectiveness of the existing or other possibly desirable methods of health administration.

The advisability of carrying out such an experiment was evident, and the best conditions seemed to be furnished by a district that corresponded to a Federal Census unit. The Federal Census unit No. 6 in Manhattan was chosen as offering suitable conditions. The records of population, births and deaths for this district were available for 1900, 1910, and for the succeeding years. This area has been utilized as an experiment station, where different methods of serving the functions of the four field bureaus above mentioned were tried out and the results studied under one directing officer. The health officer of this district was expected to know everything regarding environment and its results, the occupations and the results of occupation of residents of the district; everything about the food supply, the causes and incidence of sickness and death in this area, and the methods of approaching the groups of people living and working in these city blocks, in order that the Health Department might render the most effective service to them. It was apparent that no danger to the general organization of the department could result from an experiment of this kind and if it proved worth while it could be applied to larger groups.

The results in this district made it seem advisable to try out the system in a larger group of people in a growing community with a more varied population. The Borough of Queens seemed to furnish suitable conditions for such an experiment. (The plan comprises briefly a sharply cut line and staff organization.) The population of this Borough is about 400,000 and it was divided into four districts of approximately 100,000 people each. At the head of each district was placed a physician trained in the work of some one or more of the four field bureaus. This plan of organization was just put into effect when the epidemic of poliomyelitis broke out, necessitating a redistribution of the field force, and the execution of the plans was hampered for the period of the epidemic. After that, logical and complete district organization was established and has been in full operation during the past year. In each Health District there was a headquarters and one person was placed in charge, whose business it was to become familiar with every detail of the conditions in that community with which the Department of Health should properly have an interest. He is on hand to meet the public and he studies and learns that particular community, as a physician knows the idiosyncrasies, inheritance and reactions of his patients. The various functions of the Health Department are administered



through this central district, or community office, where a physician adequately trained in infant welfare, school medical inspection work, in tuberculosis work and in the diagnosis of communicable diseases is in charge, or if all these functions are not covered by one physician, others attached as part time medical inspectors are on hand to assist and supplement the work of the health officer. The nurses also are trained in their visiting, to fulfill all district nursing functions of the department and to keep their eyes open for all matters that might come within province of the Health Department. In short, the effort is to get away from specializations of service and to obtain a more intensive application of all functions in smaller groups of families or tenements or factories by a field force adequately trained and directed in routine field procedures of each of the four bureaus. The results, from the point of view of the control of preventable diseases, the welfare of infants, the inspection of school children and the work in tuberculosis is as good as, if not better than, before the district system was introduced and where any difference in the results under the two systems is apparent the result is in favor of the district system.

Under the district system the community feels that it has something definite, something that is its own, instead of feeling that the activities of the Health Department, as administered from a Central Bureau in another borough, are intangible, impersonal and indefinite. Queens still has many villages, some Polish, some Italian, some old aristocratic communities and some new industrial communities, each presenting totally different sanitary and health problems and the health officer who handles the different problems presented in his district becomes the real expert in preventive medicine in his community. It has been found possible for one man to grasp the problems and details of the health needs of a community of 100,000, but in a community of nearly 6,000,000 like New York, it is practically impossible for one man to analyze the great variety of problems presented by the widely different groups of people and the varied environment that go to make up the whole city. There are benefits to be derived from breaking up a problem of this kind, both for diagnosis and for treatment.

Another point in favor of the district system is the opportunity it affords for the focussing of volunteer work of physicians and relief agencies in such an area. For instance, in the Borough of Queens before the introduction of the district system there was no venereal clinic, no orthopedic clinic, no eye clinic; there was a population of 400,000 people without these indispensable special services. Yet the physicians practising in these communities knew of many instances in which there was a demand for such special treatment of the needy, and they were willing to volunteer their services in such local centers as the district and health office now offers. A beginning has now been made and several special clinics have now been established in Queens. A diagnostic and therapeutic clinic for venereal disease has been established in the Queensboro Hospital at Jamaica, and the clinical service is furnished by the physicians of that community.

The reports that come in from these district health officers are radically different from the point of view of those received from bureau officers in other boroughs. One is struck with his intimate sense of responsibility, with the all embracing human interest in each aspect of the lives of the people, young and old, rich and poor in his community, and the community responds to local service with local pride and self respect and interest in its own well being.

The physician in making a diagnosis of the individual may need the assistance of the specialist, so the man in charge of the health center submits his data to the staff officers as consultants. The staff officers are the specialists or experts, the Directors and Division Chiefs of the various bureaus, and under the district system are just as responsible as under the bureau system, but instead of working through specialized bureau employees responsible only to them, they are studying results and making recommendations to physicians, the health officers, who are responsible to the department as a whole through the Assistant Sanitary Superintendent of the Borough, and through him to the Commissioner.

It has been planned to extend this system to the Borough of Brooklyn in 1918, and the budget for the coming year has made provision so that these plans can be put into effect. The Borough of Brooklyn should have at least fourteen such districts and health center offices. Three might well be established at first and the number gradually increased. The success of the plan, if undertaken by the new administration, will depend entirely upon the quality of the central direction in the districts. A well trained full-time physician or lay sanitarian must be provided for each district office, the field force to consist of medical inspectors, nurses, and lay sanitary and food inspectors.

The difficulty has been to go slowly enough to consolidate the work properly and to have it sufficiently well organized to stand in competition with the well-established bureau type of service. The department has had at least six requests from well organized community groups, for district health centers in Manhattan. The people recognize the benefits of community spirit and such community spirit is lacking in many large areas of the five boroughs. The Borough of Richmond has a population of about 100,000 and is now organized on the district basis. The experimental district in Manhattan has been enlarged so that it now includes about 100,000 people, and is still used as a place for testing new procedures and administrative methods. Any one who attempts to compare the results of the work in one district with results of health department work in the city as a whole will be likely to fail through many fallacies, but we have shown that we can get better results under the district system with the same working force than by the bureau system, or as good results with a smaller force.

The cost of the two systems is about the same, but with some economies in rentals, janitor service and equipment under the district system.

There should be in every community a social, educational and

recreation center, and this should preferably be conducted in relation with a school, and there should also be a voluntary coöperation among physicians of the locality for a pay diagnostic and therapeutic clinic. These two facilities, together with such a health district service as above outlined should prove a boon as well as produce tangible results in improvement of health of all within reach.

From our experience, I feel that there is a great future for this system of public health administration and that it will produce results which would be impossible under the Bureau system.

#### DISCUSSION.

DR. L. E. LA FETRA said: I am sure that all who have listened to this admirable presentation of the health center plan feel that it marks an epoch or turning point with regard to our methods of health administration and that we have made a very great step forward because we have gone a step back to the community idea in which all health problems can be managed by one man or a small group of workers. This is a method of administration by which neighborhood spirit can be aroused and developed. As Dr. Emerson has well said, we have no community spirit in New York; there is no Greenwich, no Chelsea, no Yorkville, no Harlem. The group system of administration has long been employed in Paris. Paris is divided into *arrondissements*, or small departments, from which all public health activities radiate, and each *arrondissement* takes great pride in its *mairie* and its achievements. London is administered in the same way and one finds a great deal of community spirit in these groups. This has been shown to be an excellent plan for awakening community pride and of getting the people to work together.

Dr. Emerson has pointed out the advantages of the broadened view that results from this plan of coördinating the work of the different bureaus, but it seems to me that he did not make enough of the advantage of having one nurse take up all the problems of a family. There is a great deal of complaint by the tenement house mothers because of visits from so many nurses, each coming for a different purpose, when one nurse could do the same work. The poor mothers feel that they are continually holding a reception. One nurse ought to be able to perform the functions now distributed among several if she has the proper spirit.

The objection has been made that the plan of having health centers has not been tried on a sufficiently large scale as yet to warrant its general adoption. While this may not be a valid objection, it seems to me it would be well to go slow in developing the system, especially in view of the difficulty that is likely to be encountered in getting the proper personnel for the carrying out of this plan, though undoubtedly men and women can be trained for this work.

An advantage that the plan presents is that the man in charge of the health center comes to know the families from all sides.

In thinking the whole matter over, I fail to see any adequate



objection to this plan and I congratulate the city on having Dr. Emerson to elaborate and undertake its practical application.

DR. SIMON TANNENBAUM said: My remarks will be rather a supplement than a discussion of the subject presented inasmuch as I am in entire accord with the Health Commissioner on Health Center organization.

The Health Center system is organized on three basic principles: 1. Prevention of overlapping. 2. Local administration in accordance with local needs. 3. Development of the community spirit.

In view of the fact that this is a section on pediatrics, the question of most interest, no doubt, is the effect and influence of health centers on the health conditions and mortality of children.

Now let us take up the three basic principles and see what possible bearing they have on the subject:

1. *Prevention of Overlapping.*—This can best be illustrated by explaining the difference between the Bureau and Health District system. At the present time every bureau has its own force of employees who work independently of each other. The employees of the bureaus are again subdivided into divisions, each division having its own set of employees working independently of other divisions. To illustrate, there is the Division of School Medical Inspection, the employees of which do nothing but perform that particular work. A nurse of that division will visit a home for a physical defect, and owing to her status of a school nurse, she will not know and therefore not be able to take any cognizance, for instance, of a case of tuberculosis in the family. The same is true of the Baby Welfare nurses; they will visit a family for a baby attending a Baby Welfare Station and for nothing else. The same is true of midwife and foundling nurses. They will visit a home to inspect the home or the foundling, but if there is a baby in that home which is not a foundling but is attending a Baby Welfare Station, or is ill with scarlet fever, they would not be permitted to do any work for it because it belonged to two other divisions. The tuberculosis nurse and contagious diseases nurse are other examples.

Under the Health District system the family has at least come into its own, and is treated as the basic unit for Health Department service; one family, one nurse, and that nurse, owing to the fact that she serves all Health Department functions to the family, knows the family, knows all the Health Department needs of the family, and is better able to minister to them than four individual nurses, who cannot see the entire needs of the family for Health Department service.

It was during the Health District system that the Family Record Card came into existence, a continuous record of the family, as far as the services rendered by the department to the different members of the family is concerned, and it was never thought of and in fact is impossible, under any other system.

It is true that this system of an all around nurse and an all around medical inspector does away with specializing, but we consider that an advantage rather than a fault, because first of all, there are



no real specialists in the department, nurses and medical inspectors being constantly transferred from one function to another. Besides we are unwilling to admit that a nurse should visit foundlings only, or babies attending a Baby Welfare Station only, or children suffering from physical defects only, or children suffering from contagious diseases only, and that as soon as a nurse attempts to perform two such functions at one time, her worth is greatly impaired. The same is true of medical inspectors. There does not seem to be any good reason why a medical inspector who is a graduate of a medical college, and is presumed to be able to make a perfect physical examination of a school child, should not be permitted to make a diagnosis of scarlet fever in a school child at home, or why a medical inspector should not be permitted to make a diagnosis of contagious disease in the home, but not in an institution, and so we could go on indefinitely, citing similar inconsistencies.

Besides there has been a saving of time in the obviation of overlapping, which has increased the output of work and reduced the per capita cost of functions, so that we can perform more work with the same number of employees or as much work with fewer employees.

With the advantages enumerated it is reasonable to presume that the health of the children will be better conserved because it does not depend upon the exercise of any one individual function performed for the child, but depends rather upon the sum total of the functions performed for the family.

It had been feared that under the district system the preventive work such as Child Hygiene would suffer and give away to the compulsory, such as tuberculosis and contagious diseases, but the figures show that the value of preventive work has been increased on account of the prevention of overlapping and the coördination of functions.

2. *Local Administration.*—This second basic principle in Health District work is, to my mind, also a big factor in conserving the health of children.

While New York is thought of as a unit of 5,000,000 inhabitants or over, it must, at the same time, not be forgotten that it is a cosmopolitan city consisting of numerous races, which have clung to their own racial characteristics. Health Department administration that might apply to one race would not apply to another and it is impossible for an administration controlled from headquarters to take cognizance of these different characteristics. It is only the man on the spot who is familiar with the different conditions of the district who is really able to handle them successfully.

A full-time Health Officer living in the district, becoming acquainted with all the needs and conditions is surely better able to control the situation than an official at headquarters far away from the seat of operations. Besides the conservation of the health of the child does not depend upon the functions of child bureaus alone; it depends to an equal degree on the exercise of the functions of the other bureaus, and in order to be able to apply all of these to affect the health conditions of a certain district, local administration for

the purpose of coördinating and correlating all of these functions, is absolutely necessary.

As an illustration of what can be done under local administration through coördination of functions, let me cite some figures in regard to pre-school examinations which surely are of great importance in the health program of the child. During the present year 411 pre-school examinations were made in Greater New York for the first nine months, while about 300 were made in the Borough of Queens alone.

3. *Development of Community Spirit.*—This basic principle plays just as important, and perhaps a more important part in the conservation of the health of children than the other two enumerated.

The conservation of the health of children is not a medical problem only, it is a social problem to perhaps a greater degree, and in order to look at it from that point of view, the spirit of the community for the purpose of social and medical coöperation with the Health Department must be aroused. While this can be done just as well theoretically under the bureau system, it is a fact that it has not been done as well, and that the Health Center or Health District organization has shown the way in which it can be accomplished.

Publication of local periodicals, newspaper articles in local papers, lectures in various languages, conferences with food handlers of the district, conferences with janitors, the formation of Boys' Health Leagues, police coöperation, all have been developed in the Health District organization.

As a result of having aroused the community spirit we have installed five voluntary dental clinics, two voluntary eye refraction clinics, as well as one nose and throat clinic in one of the hospitals. All of this has been done within the limited space of a year and a half in the Borough of Queens under inexperienced health officers on part time, and with employees who had to be trained to perform the coördinated work of the Health Districts. On the basis of this history we are certainly justified in stating that the development of the community spirit is fostered very effectively in the Health Districts, and can be exercised for the welfare of the children with good results.

The question now arises whether the basis principles upon which the Health districts have been organized, have been actually realized.

The Health District organization has been a very much investigated plan of public health administration. I can do no better than by quoting a part of the report made by the Public Health Committee of the New York Academy of Medicine after the completion of its investigation. The report states—"that the Health District eliminates the duplication of nurse visiting, that there is undoubted economy in combined nursing service, and that there is a better opportunity for a nurse to know her district intimately if all the nursing functions of the district are performed by her." The Health District treats the family as a unit, and enables the health authorities of the district to know the general health and social conditions of the family. It abolishes narrow specialization and

gives a variety of duties. It makes the service more elastic and interesting to the workers, and it increases the output of work.

With regard to local administration the conclusions drawn by the Committee were as follows: "There seems to be no doubt that the local health staff can learn the problems and needs of a district more intimately than is possible for the highly centralized department organization."

The conclusions of the Committee with regard to the development of the community spirit are: "A well-organized and long established district organization would probably work out in this way. There are a number of things which the district officers are able to secure: namely, the coöperation of the neighborhood, coöperation of school principals, of mothers' leagues, and other agencies in the neighborhood."

I do not mean to imply that there are no disadvantages found by the Committee, but I have cited the advantages, which, to my mind, are excellent arguments in favor of the three basic principles enumerated.

After all the infant mortality is the real index of the work done among children and we can point with pride to the record in the Health District organization. In the Borough of Queens, in 1915, before Health Districts were organized there, the infant mortality rate was 102. In 1916, when the health districts were organized in that borough, it was reduced to 93, and in the present year up to the present time it has been reduced to 91. The same has prevailed in Health District No. 1, where the infant mortality has been reduced from 78 to 71 and down to 70 during the year 1916, the figures for this year not being available as yet.

DR. EMERSON, in closing, said: In regard to the question as to whether the infant mortality had not been declining in previous years in the same localities in which the district system has been in operation, it is well known that the infant mortality is a fair guide to the sanitary progress of a community, but under the Bureau system only the mortality rates by boroughs were kept and as has already been pointed out if one applies the rates for the city or a borough as a whole to a particular district one may expect to make mistakes. One cannot take the decrease in the infant mortality as a valid argument without reservations. A factor that must be recognized is that the health of a community under this plan depends upon the quality and qualifications of the health officer in charge of the center. The health officer in charge of a center receives \$3000 a year for full-time service and must abandon his private practice, or any demand upon his time that would prevent his responding to a call from the Department at any time, day or night. It is difficult to get capable men who are willing to abandon their private practice especially with the slight prospect of advancement.

One of the advantages of the district system is that it is possible to get different groups of men together for instruction, as janitors, food handlers, employers, etc. Last winter a meeting of janitors was held in Health District No. 1, in Manhattan, at which represen-



tatives of the various city departments, the Fire Department, the Police Department, Tenement House Department, Department of Street Cleaning, Department of Water Supply, Gas and Electricity, the Health Department, etc., described the functions of their respective departments, so that the janitors understood the principal features of the work of these city servants and it was found that this knowledge enabled the janitors to make an impression on the lives of the people he served.

Last night I heard a social worker speak on the overlapping of social work and the work of visiting nurses. He said that one family record showed that fifty-seven varieties of functions had been served by various visitors, and that people were complaining of this state of affairs. He heard one woman say "If they keep on sending people around, us poor people will have to keep office hours." We have opened office hours for the people for their health protection in their midst, so that they need not have office hours for us.

(To be Continued)

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## BRIEF OF CURRENT LITERATURE.

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**Bacteriology of the Urine in Children with Vulvovaginitis.**—In eighteen unselected patients with chronic gonococcus vulvovaginitis, carefully catheterized specimens of urine showed a comparative absence of bacteria. The majority of the organisms encountered by A. B. Schwartz (*Amer. Jour. Dis. Child.*, 1917, xiii, 420) were either Gram-positive cocci or diphtheroid bacilli. In most instances these were in such small numbers that they could easily be accidental contaminations from the urethra. The second portion of the urine, representing the bladder flora, was shown to be as free from infecting organisms as was demonstrated in a previous series of normals. The occurrence of vulvovaginitis did not increase the tendency to contamination of the bladder. Gonococcus cystitis may follow previous infections of the bladder by *Bacillus coli* in patients with vulvovaginitis.

**Hypertrophic Stenosis in Infants.**—L. E. Holt's article (*Jour. A. M. A.*, 1917, lxviii, 1517) is based upon a study of 133 cases of pyloric stenosis in infants in the Babies' Hospital and eight seen in consultation. He says that in many of the milder forms, the patients recover with only medical treatment. All those who do not improve under such treatment in the course of two or three weeks should be treated surgically; with the more severe types only a short delay is permissible. The symptoms which indicate surgical intervention are rapid loss in weight, persistent, forcible vomiting, and active gastric peristalsis; the presence of a palpable tumor and abnormal gastric retention aids much in diagnosis. The Röntgen ray reveals nothing of importance which cannot be discovered by a study of gastric retention, and without its dangers. The patients



who come under observation after four or five weeks of vomiting and marked loss in weight are best treated by operation as soon as the diagnosis is established. The earlier operations of gastroenterostomy, divulsion, pylorplasty, etc., were unduly severe and prolonged; they should be abandoned for the simple external division of the circular muscular fibers proposed by Rammstedt. Results by the same operator, on the same class of patients in the same institution and with the same after-treatment, show the great superiority of the Rammstedt operation to gastroenterostomy and to medical treatment. Skilled after-treatment is quite as essential to good results as good surgical technic. Cases of gastroenterostomy followed from four to eleven years indicate that growth and development are not impaired by the operation. Cases followed two and three years after the Rammstedt operation show no interference with health and progress. Patients not operated on usually show no symptoms after the first year. Yet the possibility that this condition may be the basis of pyloric obstruction in later life undoubtedly exists.

**Multiple Cartilaginous Exostoses.**—The patient of P. M. Stimson (*Arch. Pediat.*, 1917, xxxiv, 338) was a nine and one-half-year-old boy prematurely born at the time of his mother's menopause, and following a severe nephritis during the last two months of her pregnancy. As an infant he was very weak, but after a year he appeared to be a fairly normal child except for epileptiform convulsions, which have occurred all his life, though only very infrequently of late. Irregularities in his bones were first noticed at the age of four, since when they had grown slowly and apparently become more numerous, finally involving all the long bones, the scapulæ, the clavicles and the ilii. His extremities also showed a marked distal hypotonia. His mental age was apparently about five years, and the development of his carpal bones and some of his ossification centers about that of a six-year-old. The mother and an older sister also had multiple exostoses. Findings common to many of the cases reported in the literature were also noted in this case. The bones involved were those usually found so affected, and the lesions themselves were typical. Of the concomitant features, the midpoint of height was slightly elevated above the symphysis, concurring with Ehrenfried's findings that this is usually the case. Subluxation of the head of the radius due to relative shortening of the ulna was present in each elbow. Premature ossification of the epiphyses was not made out, however, but, on the other hand, was found marked backwardness in the formation and growth of the carpal bones, as well as of some of the ossification centers. The hypothesis that the islands of cartilage, by a metaplasia of which the exostoses proper are formed, are left behind in the growth of abnormal epiphyseal cartilage, was apparently substantiated by the finding of an exactly similar condition in an exostosis itself. The conclusion is drawn that the exostoses which characterize this clinical entity are due to the metaplasia of islands of cartilage which have been cut off from the epiphyseal cartilages and left behind in the periosteum.

**Therapeutic Value of Pertussis Vaccine.**—The study of A. I. Von Sholly, J. Blum, and L. Smith (*Jour. A. M. A.*, 1917, lxxviii, 1451) was made during the late summer of 1916, as part of the investigation by the Research Laboratory of the New York City Health Department on the value of pertussis vaccine in whooping-cough. Since whooping-cough vaccine statistics under present conditions must be based chiefly on parents' reports, one must use careful judgment in accepting what they say. Statistics, to be of any value, must be drawn from several thousand cases. Different groupings of the writers' figures give distinctly different results. They show that the nonspecific influenza vaccine in Group 1 differs very little from pertussis vaccine in influencing the duration of the paroxysmal stages of the disease. In Group 2 it shortens the average length of this stage by eight days. In Group 3 it acts less well, on the whole, than the specific vaccine in the mild cases, and better than the specific vaccine in the moderate and severe cases. Of all the cases, the shortest course was run in nonvaccinated controls and those receiving inert, milk-colored water. None of the patients inoculated for prophylaxis with either influenza or pertussis vaccine contracted the disease. A partial immunity was exhibited by 31.6 per cent. of the families. Fifty-eight per cent. of the children in these partially immune families escaped after exposure in the family. Of 700 children exposed in their families, 24.8 per cent. escaped whooping-cough. More observations and more critical observations with controls for comparison must be made before the case can be considered made out for the curative and prophylactic value of a specific pertussis vaccine.

**Frequency of Tuberculides in Infancy and Childhood and Relation to Prognosis.**—A study was made by T. C. Hempelmann (*Arch. Pediat.*, 1917, xxxiv, 362) of 40 cases of tuberculosis in children showing papulonecrotic tuberculides. Thirty of these were infants under two years of age and the other 10 were distributed through the period between two and twelve years. In a series of 130 cases of pulmonary tuberculosis in infants under two years of age, tuberculides occurred thirty times (23 per cent.). Sixty-two of these babies were in the first year of life and of these, 21 showed tuberculides (33.8 per cent.). Sixty-eight were between one and two years of age and 9 of these (13.2 per cent.) showed tuberculides. In all but 1 of the 40 cases there was evidence of lung or tracheobronchial lymph-node involvement in addition to the tuberculides. Tuberculides seem to bear no direct relation to prognosis, as some children are now under observation who showed tuberculides three, four and five years ago.

**Periodic Variation in the Rate of Growth of Infants.**—A. Bleyer (*Arch. Pediat.*, 1917, xxxiv, 366) has made a study of the weights of 1000 infants to determine the existence of variations in early life and to ascertain the influence of summer heat upon the rate of growth of infants. Periodic variation in the rate of growth, consisting of an acceleration from midsummer to late fall, a retardation in winter and greater retardation in spring and early summer, was

found to exist among infants. This did not appear to be due to change of diet. Weight gains in the first year of life were greater in summer and fall than in winter and spring and in the second year of life the best gains were made in August, from which it would not appear that heat has a retarding effect upon the rate of growth, but may even favor it. It would seem that the external factors of growth may have to be taken into account in constructing normal weight curves for the first and second years of life.

**Features in City Prevalence of Poliomyelitis.**—Reviewing the cases of poliomyelitis which occurred in Newark in 1916, C. V. Craster (*Jour. A. M. A.*, 1917, lxxviii, 1535) says that of all those attacked, 83.8 per cent. were under five years of age. Of all those who died, 85.4 per cent. were under this age. The nervous system bears the brunt of the attack, death being due to respiratory paralysis in 99 per cent. of all fatal cases. Lesions in the intestine suggest a portal of entry of infecting organisms. The nasal and tonsillar mucosæ were found normal. Paralyzed domestic animals found during the epidemic did not show at necropsy any pathologic lesions resembling human or monkey poliomyelitis. There is no reason to suppose that the lower animals play any part in the spread of poliomyelitis, and it is extremely doubtful if poliomyelitis exists among them. It appears to be a disease carried directly from place to place by some human carrier not yet possible of identification. Infection by direct contact, although possible, is not probably the commonest way of infection. The predisposing causes of the disease seem to be age (under five years) and season (high temperature and low rainfall).

**Effect of Vaccinia on Children.**—It has been alleged that the constitutional disturbance produced by vaccination in the first year of life cannot be regarded as other than serious. J. P. Kinloch's (*Lancet*, 1917, cxcii, 993) analysis deals with 3804 cases of infectious diseases, of which 3058 were vaccinated and 746 unvaccinated, and they show repeatedly an increase in the incidence of disease complications and death among the unvaccinated. It is not contended that vaccinia increases the resistance of the body to disease in general; but the figures submitted afford no evidence that vaccinia has a prejudicial effect on a child's future well-being as judged by its response to subsequent infection.

**Fracture of the Forearm in Children.**—J. Grossman (*Interstate Med. Jour.*, 1917, xxiv, 547) says that Colles' fracture occurs rarely in infants and children. Where, for any length of time, infants and children refuse to use their forearms, after having sustained an injury, fracture should be suspected. Fractures may be present even though the cardinal signs of fracture, crepitus, false mobility, deformity, are absent. These fractures are usually of the subperiosteal variety. "Pencil" tenderness is the diagnostic feature in these cases. Epiphyseal separation of the radius occurs with fair frequency. This should be looked for in all cases with injured forearms and undoubtedly will be found more often. Plaster-of-Paris bandages are far more efficient than splints and should be employed



in all cases of fracture. Proper immobilization is as important as proper reduction in order to obtain a successful issue. Shorter periods of immobilization, early massage and passive movements should be employed in treating fractures occurring in children.

**Lead Poisoning in Children with Especial Reference to Lead as a Cause of Convulsions.**—K. D. Blackfan (*Amer. Jour. Med. Sci.*, 1917, cliii, 877) reports four cases of convulsions in children due to lead poisoning. He urges that energetic prophylactic measures be taken with children who habitually eat painted articles in order to guard against the development of lead poisoning. A number of children nibble the white paint from enameled cribs. In all patients with convulsions in which the etiological factor is not clear, lead should be suspected. In the majority of instances there are other evidences of the condition, *e.g.*, the lead line, basophilic degeneration, and the presence of lead in the feces. The examination of the spinal fluid may prove to be an index as to the seriousness of the affection and of prognostic aid. In three of the four patients changes were found. In one patient changes were present in the spinal fluid for many months, there being an increase of cells and marked globulin reaction, and the patient eventually succumbed. In another patient who has recovered, and in whom the convulsions were not severe, the spinal fluid could not be examined at the time of the convulsions. Four weeks later the spinal fluid contained twelve cells and the globulin reaction was normal.

**Presence of Meningococci in Purpuric Elements of Meningococcal Infection.**—Cerebrospinal meningitis is sometimes accompanied by petechial eruptions. A. Netter and M. Salanier (*Brit. Jour. Child. Dis.*, 1917, xiv, 101) have shown that these cutaneous hemorrhages are not due to intoxication, but result from the deposit of meningococci around the vessels. In two cases microscopic examination of the contents of the vesicles showed meningococci, although in the first there was no meningitis, and in the second case the meninges were not attacked until several days after the onset of the disease. Purpura may occur some days before the meningeal involvement. The latter may remain latent indefinitely or even be absent altogether. The demonstration of the meningococcus in the skin lesions will confirm the diagnosis. It will give us information more quickly than blood culture which alone has been in use hitherto and of which the results are far from constant. An early diagnosis is of the utmost importance, because such a diagnosis will enable us to undertake rapid and intensive serotherapy, all the more necessary owing to the special gravity of these cases.

**Hyperacute Purpura without Cerebrospinal Meningitis.**—A. Netter, M. Salanier and Mme. Wolfram (*Brit. Jour. Dis. Child.*, 1917, xiv, 104) record a fatal case of hyperacute purpura in an infant of ten months. Though vesicles were absent the existence of meningococci was detected by mere scarification of the purpuric spots.



## REVIEW.

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ELEMENTS OF PEDIATRICS. By ROWLAND GODFREY FREEMAN, A. B., M. D., Adjunct Professor of Pediatrics New York University and Bellevue Hospital Medical School; Attending Pediatricist to the Roosevelt Hospital, New York, etc.; Ex-President of The American Pediatric Society. Publishers, The Macmillan Company, 66 Fifth Avenue. Price \$2.00.

Many medical books are written for the student and practitioner and in consequence do not meet the exact needs of either one. This book is directed to, and primarily written for, the medical student and meets his needs. It is not an exposition of the diseases of infants and children, on the contrary it deals with the methods and regime necessary to keep the child well.

As a preliminary text-book to the study of pathological conditions in early life it is excellent, and can be strongly recommended to teachers of the diseases of children for their classes. The student mastering the contents of this volume will be in a far better position to answer the innumerable questions which the mother will propound to him and will not dread the feeding of infants which is so often the "bugbear" of the practitioner.

Following the essential anatomy and physiology, the development of the child is given with helpful charts and diagrams. The care of the healthy child is described tersely and lucidly, following the infant from the needs of the first day through the various feeding periods.

The author has covered the different subjects of infant feeding wisely and well by avoiding the confusion and uncertainty caused by a detailed description of the many methods advised. Rather has he laid emphasis on the principles of infant feeding. Simplicity in this art is productive of the best results and in this volume we are glad to see that no complex mathematical methods are given or described.

An incubator for premature infants is still advocated although most pediatricists condemn its use preferring an incubator room or an improvised properly heated bassinet.

The chapter on mental development is too brief and does not prepare the student sufficiently to appreciate the abnormal.

Especially to be commended is the chapter on laboratory examinations since it gives not only modern methods of determination but also their interpretation as applied to infants and children.

A practitioner who did not have the advantages of a pediatric training such as is given in the class A medical schools of to-day would be much benefited by a study of this book.

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## ORIGINAL COMMUNICATIONS.

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### THE FUNCTIONS OF A WOMAN'S HOSPITAL IN A LARGE CITY.\*

BY

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New York, N. Y.

NEVER in the history of the world has woman been held in higher esteem than at present. Since the day when a mother in France having lost four sons in the present war held aloft her six months' old boy and shouted "Vive la France," this respect for woman and motherhood has steadily increased. The medical problem of our Army and Navy in this war is the conservation and reconstruction of men. The function of a woman's hospital is the conservation and reconstruction of women. This function implies equipment for social service, obstetrics and gynecology, and any distinction in the comparative importance of these three branches of the institution would be invidious. Every board of managers and every donor of a woman's hospital must realize at the start that a hospital should never be a fixed quantity. However complete a hospital may appear on the day of its opening to the public, its completeness is extremely shortlived. A modern woman's hospital must be a thing of life and growth if it is to meet the needs of the community, its surgical staff, its nursing staff and the university with which it should be connected. There have been several periods in the life of the Sloane Hospital for Women, over which the writer has the honor to preside, when in the opinion of its managers it was nearly complete and yet, on looking back, it seems strange that such an idea should have entered our heads. To the building itself there have been

\* Read by invitation before the Philadelphia Obstetrical Society, December 6, 1917.

three additions and each has been larger than the original plant. To the original obstetrical department there have been added the gynecological and the social service departments, each of which we now consider an indispensable part of the hospital. These three departments with their individual functions will now be considered separately.

*The Social Service Department.*—Although the youngest child of the organization, its growth has been very rapid. Starting in seven years ago last July with one social service worker, we now have four full-time workers and, as often happens in a household, the activities of the family center around the youngest child. This will be seen from the following: With the present demand for child welfare and conservation of mothers, no woman's hospital is regarded as performing its duty unless its social service department follows a patient from the day of her application to the hospital for obstetrical care until, subsequent to her confinement, this patient is able to return to her work and the child is put in touch with the proper milk station or other organization which will be responsible for its future care. This means many calls by the social service workers—antepartum calls and postpartum calls. During this last year our social workers have made 3341 calls on maternity cases. This very need has recently opened the eyes of some of our hospitals in New York to the inefficiency of their work. There has been a terrible waste of time, of energy, of shoe leather and of infant lives. Each hospital has accepted patients from all over the City of Greater New York, from the Bronx to the Battery and Brooklyn. This plan is less objectionable in the gynecological department where an individual operator may attract patients from a distance and where no baby enters the problem, but even here follow-up work is made more difficult. In the Obstetrical Department, however, this acceptance of patients from all parts of a large city spells *inefficiency* at a time when *efficiency* and *saving of waste* should be written large. The solution is a limitation of the field from which the obstetrical clientèle of a woman's hospital should be drawn, so that the social service department can do intensive work, making frequent antepartum calls with prenatal instruction and postpartum calls with numerous varieties of follow-up work useful alike to the patient and the hospital. This can be done with comparative ease in a limited, crowded district. It cannot be done in an unlimited one. To further this ideal the obstetrical hospitals in New York have met recently and have organized a "Maternity Service Association," agreeing to limit the field from which they will accept patients to certain well-defined districts,

furthermore agreeing to refer applicants from other districts to the hospital in whose district they reside. The only objection raised to this plan has been the fear that the service of the individual hospital might be reduced below its needs for teaching purposes. It is firmly believed, however, by some of us who have studied the problem, that if each hospital is honest in carrying out its agreement to refer to the hospital in their district applicants at a hospital outside the district wherein they reside, the service of each hospital will be ample. Moreover, it is agreed between the members of this Maternity Service Association that special cases referred to the hospital by physicians and all emergency cases may be admitted at any time without regard to the district from which they come.

Another advantage of this Maternity Service Association lies in the attempt to standardize the care of expectant mothers. Each member of the Association agrees to adopt at least the minimum standard of obstetrical care of its patients. This minimum standard may be briefly outlined as follows:

Each hospital or clinic member agrees:

1. To make strenuous effort to induce all patients to apply early in pregnancy.
2. To urge patients to return to the hospital or clinic every four weeks up to the end of the sixth month and every two weeks thereafter. If they do not do so, a postal shall be sent and if there is no answer in two days the patient shall be visited by a nurse or social worker.
3. To instruct each patient to bring a specimen of the urine at each visit.
4. To give each patient printed instructions on prenatal care, prepared either by the hospital or by the Children's Bureau at Washington.
5. That the medical examination shall include: *a.* A thorough physical examination. *b.* An examination of the urine every four weeks up to six months, then every two weeks thereafter. *c.* A blood-pressure estimation at each visit. *d.* A Wasserman test in every suspicious case. (At the Sloane Hospital, a Wassermann test is made on every applicant to the Obstetrical Department.)
6. Each hospital agrees to accept cases during pregnancy which need bed care, owing to some definite obstetrical condition.

To assist in the campaign for better education, better nursing and improved social condition of expectant and parturient mothers and babies, it is proposed to establish in each hospital district one or more so-called "maternity centers," in which lay representatives



from different organizations such as the New York Milk Committee and The Women's City Club will unite their efforts with those of the medical profession.

Thus far we have been discussing a function of a woman's hospital in which the Social Service Department has been chiefly concerned, but, of course, this social service is so intimately connected with the obstetrical and gynecological departments that all three work as one. A social worker is present at both the obstetrical and gynecological clinics of the Sloane, makes note of the address and social condition of the patient, sees that she has the circular of instruction and not only notes when the patient is told to return but follows her up with a postal or a call if she does not return. While the patient is in the hospital she is visited by the social worker, who gains her confidence, helps her in home problems, hunts up the father of the illegitimate child where called for and often arranges for the marriage. In her last annual report the head of our Social Service Department reported as follows: "We have brought about fifteen marriages in and outside of the hospital. All seem to have turned out well with one exception."

Before leaving the hospital the social worker instructs all mothers in the care of their babies and arranges for institutional care of mother, or baby, or both where necessary. She sees to it that the baby is put in touch with the proper milk station and visits the mother and baby in their home. The value of the follow-up work in the Gynecological Department can scarcely be overestimated. Many obstetrical patients even of the best maternity hospitals have pelvic conditions needing gynecological treatment. These conditions may have resulted from obstetrical injuries of years' standing or may be pelvic growths. If the patient does not make a good recovery after leaving the Obstetrical Department the social worker brings her to the Gynecological Department for examination and treatment. This is the reconstructive work of the hospital. Again, the follow-up work in the Gynecological Department gives the operator accurate knowledge of the success or failure of his operations and tends to secure the return of his failures to him for correction rather than allowing them to drift into other hands.

*The Obstetrical Department.*—The functions of the obstetrical department of a woman's hospital are twofold: (1) Humanitarian and (2) Educational. Regarding the humanitarian function little need be said. The benefit of skilled hospital care of pregnant and parturient women is self-evident and need not occupy our time at present. The day has passed when a hospital can be considered as

performing its full duty to the community and to the medical profession when it just cares for the sick and furnishes experience and material for papers for its one to four or five attending physicians. To-day, a hospital must be considered a teaching center and is best connected with a medical school and a university for which the hospital facilities are available. This applies as well to a woman's hospital as to a general hospital. This means that the attending obstetrician and gynecologist expects to see sections of students at work in the antepartum obstetrical clinic, in the gynecological clinic, in the delivery room, and in the wards. With the present State Board requirement that a medical student before graduation must have attended a certain number of women in confinement, it means that the woman's hospital of a given medical school must have an obstetrical service of a certain size for each hundred medical students. At the Sloane Hospital, undergraduate students are allowed to deliver only multigravidæ, the primigravidæ being reserved for the resident staff. The importance of having our medical students thoroughly drilled in pelvimetry, palpation, diagnosis, blood pressure taking, etc., in the antepartum clinic before his work in the delivery room of the hospital and especially before being sent into the tenements, is easily understood. With the Sloane Hospital for Women under the control of the combined chair of Obstetrics and Gynecology, this sequence of training is easy. Students of the fourth year are assigned to the hospital for two months of intensive training in obstetrics and gynecology and the time is about equally divided between the two Departments.

*The Gynecological Department.*—This is the reconstructive department of the hospital. Aside from patients referred from the College clinic in Gynecology and from the medical profession of the City, every patient who has been confined in the Obstetric Department of the Hospital and who is found by the social worker on her visit to the home not to have a good convalescence is sent for examination and treatment if needed to the Gynecological Division of the Hospital. This has many advantages, among which may be mentioned the restoration of womanhood, the protection of the reputation of the hospital, and the furnishing of ample material for instruction of doctors, students, and nurses. Those of us who have had the privilege of many years of service in a woman's hospital (before the war we used to speak of it as a "Frauen-Klinik"), feel that no maternity hospital is complete without its gynecological department. The obstetrical and gynecological departments are interdependent. Chronic obstetrical injuries and complications are dealt with in the

gynecological department. Gynecological operations are subjected to the test of maternity in the obstetrical department. Womanhood is conserved and reconstructed.

For several years the general surgeon has been preaching funeral sermons and performing the last rites over the supposed corpse of gynecology. Yet gynecology is not dead and never will die so long as women marry and bring forth children. The name "gynecology" may die and "obstetric surgery" may take its place but the work will still be needed. The general surgeon does a great deal of gynecology and probably will do a great deal in the future but that which is bound to keep gynecology, or the same branch under another name, alive, is obstetrics. The conditions furnishing a large part of gynecology are the complications and injuries of obstetrics. In these conditions the general surgeon never has sufficient interest to give him either wide experience or ripe judgment. He never sees enough obstetrics to make him the best judge as to whether a pelvic tumor complicating pregnancy should be operated upon or not and if so when. He never has interest enough in obstetrics to make him the best judge as to whether a child will come through a given pelvic canal or not. He seldom has interest enough in plastic work on the parturient canal to make him study it in its relation to parturition, hence the general surgeon is seldom the best man to perform plastic work on the parturient canal. So little interest do general surgeons usually take in plastic pelvic work that instances have occurred in which orders have been given to their dispensary staff not to send plastic cases to their wards. These are certainly not the best men for plastic work.

Many years ago I was urged by one of the authorities at the College where I have the honor of occupying the chair of Obstetrics and Gynecology, to give up gynecology and devote myself solely to obstetrics. This I refused to do on the ground that no one could justly carry the responsibilities of the Sloane Hospital, then only a maternity hospital, unless he kept up his work in gynecology. This decision has never been regretted by me and now that the hospital is a complete woman's hospital devoted both to obstetrics and gynecology, the decision seems justified. The man who is best fitted for obstetrics with its complications and injuries is the man with gynecological training and experience. The man best fitted for gynecological work is the man not only with surgical but with obstetrical training and experience. The hospital best equipped for the conservation and reconstruction of women is a woman's hospital with a social service, an obstetrical and a gynecological

department. A City with one or more such hospitals is rich. A City without one such hospital is poor.

10 WEST FIFTIETH STREET.

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## A PRELIMINARY REPORT OF AN OPERATION FOR CYSTOCELE.\*

BY

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(With eight illustrations.)

THE lack of uniform after-results in operations for cystocele is recognized by all gynecologists. This fact is demonstrated in the literature by the number of operations suggested for the cure of this condition. For some time it has been my endeavor in the repair of cystocele, to restore the anatomical relations of the injured structures. However, the after-results continued uneven and I sought to improve my technic. Therefore, I wish to submit for consideration my present procedure, whose immediate results are so promising as to warrant a presentation at this time.

Cystocele, in the female, is most often defined as a hernia of the bladder resulting from injury sustained during parturition. This injury is caused by the presenting part or results from manual or forceps deliveries. Rarely, cystocele is present in the nullipara and then it is the result of congenital defects in the supports of the pelvic viscera. Usually, cystocele develops gradually and accompanies varying degrees of uterine descensus. However, it may be uncomplicated and is always present with complete prolapse of the uterus. The term hernia as applied to cystocele is misleading as it suggests a definite hernial ring. This is most often absent and commonly we have instead a weakening and sagging of the fascial supports of the bladder and rarely we may find an irregular tear in these tissues.

*Anatomy.*—In the female the floor of the pelvic cavity is formed by the levatores ani and the coccygei muscles with their superior and inferior fascia and the upper and lower fascial layers of the triangular ligament. Some writers attribute to the fascia, others to the muscle, and still others to both the fascia and muscle, the principal support of the pelvic viscera. I believe that Frank(1) is correct when he refers to the "subperitoneal connective tissue"

\* Presented before the New York Obstetrical Society, November 13, 1917.



as the holding apparatus and to the "musculo-fascial plate" or pelvic diaphragm as the supporting apparatus. In cystocele we are primarily interested in the anatomy of the holding apparatus and we shall review it somewhat in detail. To Piersol(2) we are indebted for probably the most concise description, which is as follows.

"*The Pelvic Fascia.*—The pelvic fascia is attached above to the promontory of the sacrum and the iliopectineal line (linea terminalis) of the pelvis where it becomes continuous with the iliac fascia. It descends over the surface of the pyriformis and laterally over the upper portion of the obturator internus and the pelvic diaphragm. In the upper part of its course over the pelvic diaphragm it is crossed by a curved thickening, the *arcus-tendineus*, which is attached behind to the spine of the ischium and passes in front, in the female, upon the bladder, and is continued thence to the anterior pelvic wall to be attached on either side of the symphysis pubis, a little above its lower border, as a *lateral pubovesical ligament*. Along this tendinous arch the pelvic fascia gives off a layer which passes inward to the pelvic viscera, and is termed the *fascia endopelvina*. In its anterior portion this forms an investment of the base of the bladder in the female, and its undersurface in this region is in contact with, and indeed may be regarded as being fused with, the superior layer of the triangular ligament. That portion of the layer which intervenes between the bladder and the posterior surface of the body of the pubis forms what is termed the *median pubovesical ligament*. The continuation of the pelvic fascia passes downward over the surface of the pelvic diaphragm, and is termed the *superior fascia* of that structure (*fascia diaphragmatis pelvis superior*).

"*The Obturator Fascia.*—From the line along which the pelvic fascia leaves the surface of the obturator internus muscle to pass upon the pelvic diaphragm, a sheet of fascia is continued downward over the surface of the obturator internus muscle to be attached below to the tuberosity and ramus of the ischium and the ramus inferior of the pubis. This is the *obturator fascia*. Along its upper border, nearly corresponding with the 'arcus tendineus' of the pelvic fascia, but lying above this thickening and ending anteriorly farther from the median line, is a similar curved thickening from the spine of the ischium, or in some cases from the iliopectineal line behind, to the posterior surface of the body of the os pubis in front. From this thickening the greater portion of the levator ani muscle arises; it is consequently termed the *arcus tendineus levatoris ani*, or more briefly the *white line*. From the line a thin layer of the fascia is continued inward upon the under surface of the levator ani, forming what is termed the *anal fascia* (*fascia diaphragmatis pelvis inferior*)."

Cunningham(3) gives a slightly different but more detailed description of the pelvic fascia. He refers to it as the endopelvic fascia and says it is a strong membranous layer which consists of

two main parts; a parietal part, which forms part of the pelvic wall, and a diaphragmatic part, which covers the upper and lower surfaces of the pelvic diaphragm. The upper fascia of the diaphragm is known as the visceral layer because it enters into intimate relationship with the pelvic viscera. Strictly speaking, he says, the bladder and urethra, the vagina and the lower part of the rectum lie in the visceral layer of the pelvic fascia.

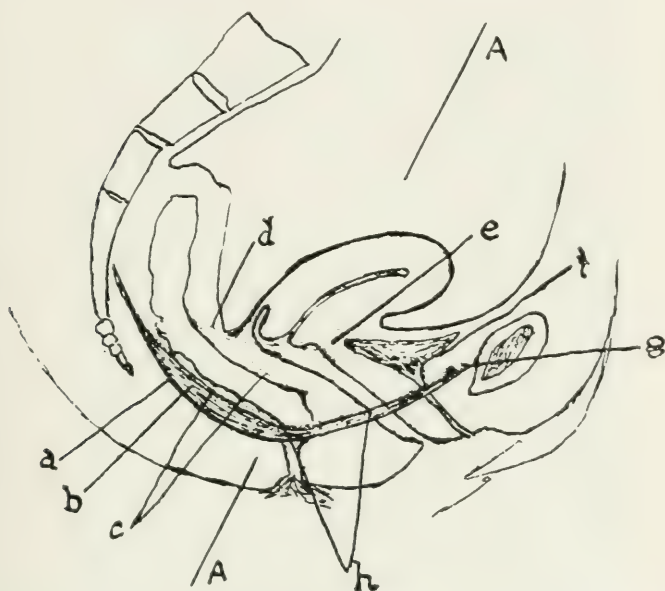


FIG. 1.—Showing the division of the endopelvic fascia into the various layers in connection with the viscera. *a*, Anal fascia; *b*, levator ani; *c*, rectal layer; *d*, rectovaginal layer; *e*, *f*, *g*, vesical layer (*e*, vesicovaginal layer; *f*, vesical layer and *g*, anterior ligament of bladder); *h*, lower layer of endopelvic fascia; *AA*, plane of section in Fig. 2. (From Fitzgibbon: *Surg. Gyn. and Obst.*, 1916, vol. xxii, p. 9.)

This visceral layer springs from the parietal layer immediately above the origin of the levator ani. It stretches across the cavity and helps to separate the perineum from the remainder of the pelvis. If it is traced medially, in the posterior part of the pelvis, it is found that the rectum sinks into its substance. In front of the rectum it is carried over the upper part of the vagina on to the uterus, and in front of the uterus, it is lost on the bladder. Still more anteriorly it can be followed across the median plane to the opposite side. In this last part of its extent two thickened bands of its substance, one on either side on the median plane extend from the back of the pubis to the anterior border of the bladder.

If it is traced from its origin at the parietal fascia toward the median plane it is found to divide into secondary lamellæ which ensheath the pelvic viscera. These lamellæ are the vesical, the rectal, and the rectovaginal. The vesical layer passes on to the bladder and in front of the urethra and vagina; the rectal layer passes behind the rectum; and the rectovaginal layer crosses between the rectum and vagina. Further in describing the true ligaments of the bladder, Cunningham says: "the lateral pubovesical ligaments are merely the lateral parts of the vesical lamella; while the anterior or medial pubovesical ligaments are thickenings of the anterior part of the same lamella, on either side of the median

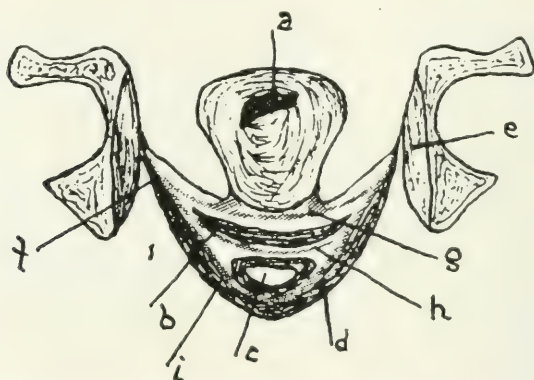


FIG. 2.—Coronal section through pelvis showing the division of the visceral layer of pelvic fascia into layers in relation to the viscera. *a*, Uterus; *b*, vagina; *c*, rectum; *d*, levator ani; *e*, obturator internus; *f*, visceral pelvic fascia; *g*, vesical or vesicovaginal layer; *h*, rectovaginal layer; *i*, rectal layer. (From *Fitzgibbon: Surg. Gyn. and Obst.*, 1916, vol. xxii, p. 10.)

plane. The lateral ligaments connect the inferolateral surfaces of the bladder to the main layer of the visceral pelvic fascia, and indirectly to the side wall of the pelvis. The anterior band the anterior border of the bladder to the back of the symphysis pubis" (see Figs. 1 and 2).

Kelly(5) in describing the natural landmarks in the bladder says: "important points of reference also are those relating to the fixed and movable portions of the bladder. As the bladder is emptied, the upper, more movable portion, covered with peritoneum settles down into the lower, and relatively more fixed portion, which lies in close relation to the vagina, until it comes to lie within it as one saucer rests in another." In my opinion the fixed portion of

bladder, referred to above, corresponds to the support given to the bladder by the vesical fascia or true ligaments.

Whether we accept the anatomy of the "holding apparatus" as described by Piersol or by Cunningham, we are impressed by the fact that the bladder is held up by thickened connective tissue which has a sling-like action. Thus the bladder differs from other viscera supported by ligaments. This has been graphically de-

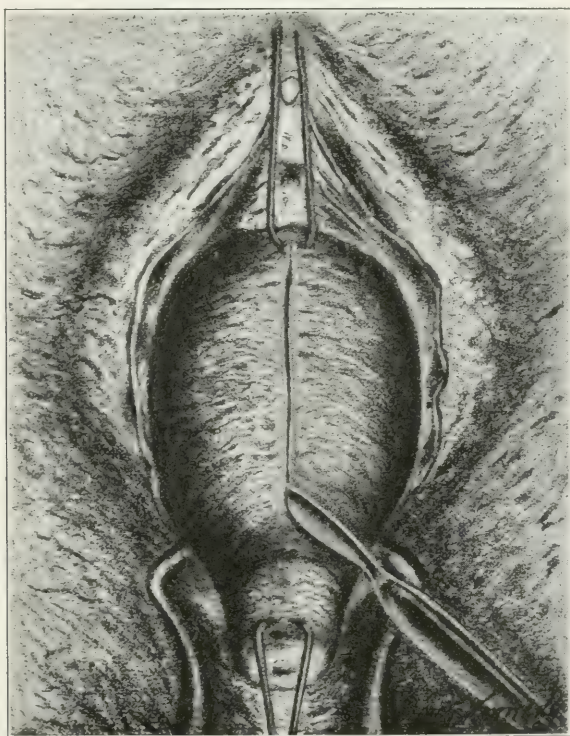


FIG. 3.—Incision in anterior wall.

scribed by one author who says that all other viscera, when full or dilated, descend, whereas the bladder when full or dilated ascends. This fact is also in keeping with Kelly's description of the natural landmarks in the bladder. In other words when the bladder is functioning normally, that is, acting as a reservoir, and any strain is put on it, its plane of motion is away from its true ligaments.

In repair of cystocele, our work is based on a false premise if we attempt to restore the normal relations and landmarks of the bladder by attaching it by false ligaments to the uterus and broad ligaments.



This is doubly true, if at the same time we disregard or even destroy, by our dissection, the true ligaments of the bladder. So too will we fail to obtain satisfactory after-results in our attempted anatomical repair if we simply dissect out the edge of the true pillars and coapt them with simple sutures or with mattress sutures which only form a slight buttress in the midline. We must remember that while the true ligaments are spoken of as fascia, they are not fascia

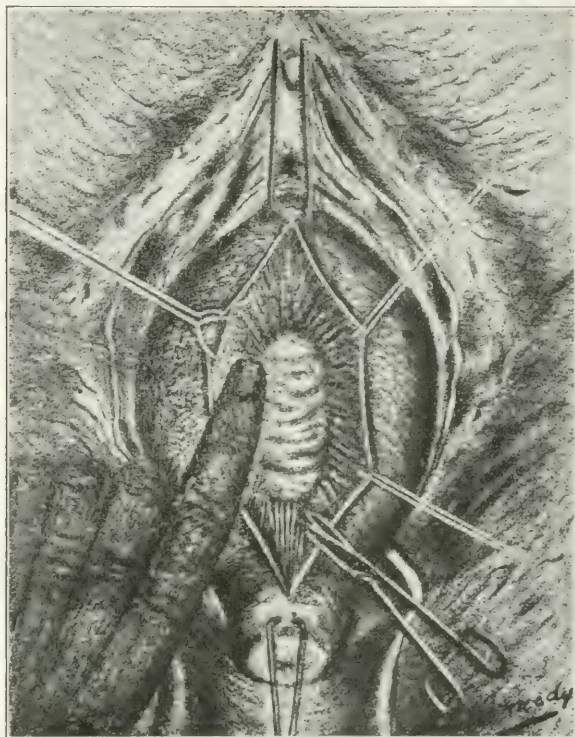


FIG. 4.—Incision down to second line of cleavage, bladder demonstrated in mid-line by blunt dissection, so-called uterovesical ligament about to be cut with scissors, the edge of the pillars of the bladder are partly demonstrated but for the greater part they are still attached to underlying vaginal tissues.

such as fascia lata or even the fascia of the external oblique. Furthermore, in cystocele this fascia is thinned out and weakened and suturing as above will at best coapt only weakened tissues which will not be restored to their normal holding strength and in a large percentage of cases there will be a recurrence of the cystocele. These methods are, therefore, but little better than anterior colporrhaphy. When this was the operation of choice the need was recognized for a

strong buttress under the bladder and this gave rise to transposing the broad ligaments, the levator ani or even the uterus, for the cure of cystocele. The following technic, which I offer, is an extra-peritoneal operation with a free mobilization of the bladder and its pillars. This enables us to lap the true ligaments and restore their

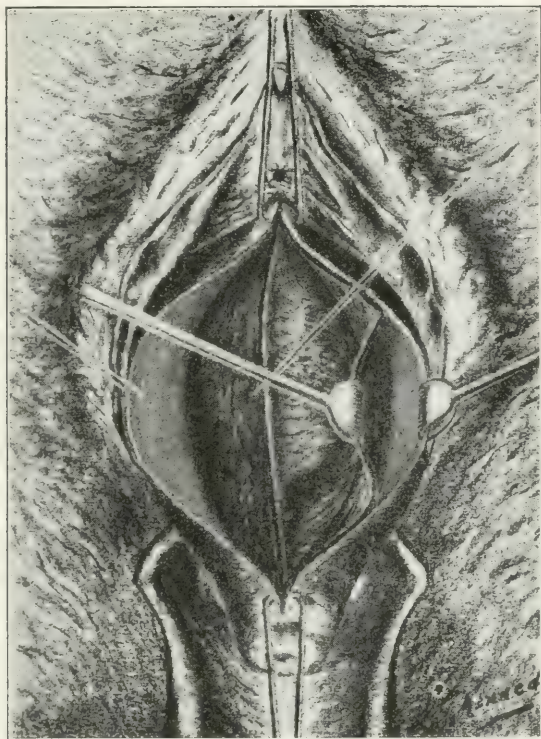


FIG. 5.—Bladder freely separated from the cervix up to peritoneal fold and well out on either side; also freely separated from the underlying pillars. On the left the pillar of the bladder has been separated from the underlying vaginal tissue and by blunt dissection well out to the "arcus tendineus." On the right the cutting dissection of the pillar from the underlying vaginal tissue has been completed for the mid portion, and the blunt dissection has been started.

*Note.*—The cutting dissection along the whole line of the incision should be done before any further blunt dissection is attempted.

sling-like action to the normal or greater holding power, and thus restore the landmarks in the bladder.

*Technic.*—A small volsellum forceps is applied to the mucous membrane of the anterior vaginal wall about 1 centimeter above the cervix and another forceps about 1 centimeter below the external urethral orifice. Between these forceps a vertical incision

is made through the mucosa and superficially into the underlying tissues. As soon as an edge on either side can be grasped with Allis forceps they are used as tractors and the incision is carefully carried forward until, in the midportion, the bladder can be demonstrated by blunt dissection (Fig. 3).

This blunt dissection is continued downward until the cervical attachment of the bladder pillars and the so-called uterovesical

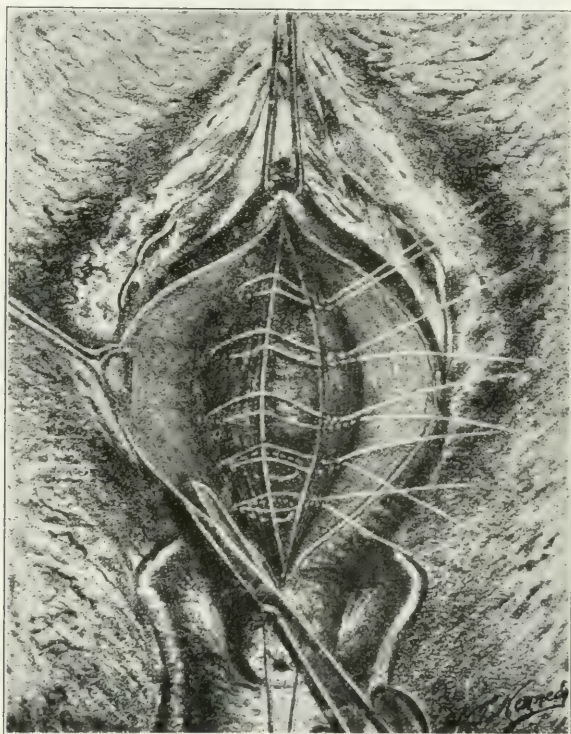


FIG. 6.—Free mobilization of the bladder and its pillars. The transverse mattress sutures in place; the lower two include the cervix in their bite.

ligament are demonstrated. The latter is cut with scissors, keeping well in midline to avoid severing any of the cervical attachments of the bladder pillars (Fig. 4).

The bladder is now separated by blunt dissection, using the gauze-covered finger, from the cervix upward to the peritoneal reflection and laterally well out to either side. By further blunt dissection the bladder is separated from the underlying pillars upward to the urethra and well out on either side. If there is a urethrocele, the dissection is carried up to the external urethral orifice. When the



bladder is well mobilized, the bladder pillars are dissected from the underlying vaginal mucosa (Fig. 5).

In the midline the fascia and underlying mucosa are most often densely adherent and it is only with the greatest care that the true line of cleavage can be demonstrated. Too often at this point, by haste or the cutting of unidentified structures, the fascial sling is destroyed or buttonholed and we will fail to demonstrate a firm connective tissue. With the technic which I shall now describe I

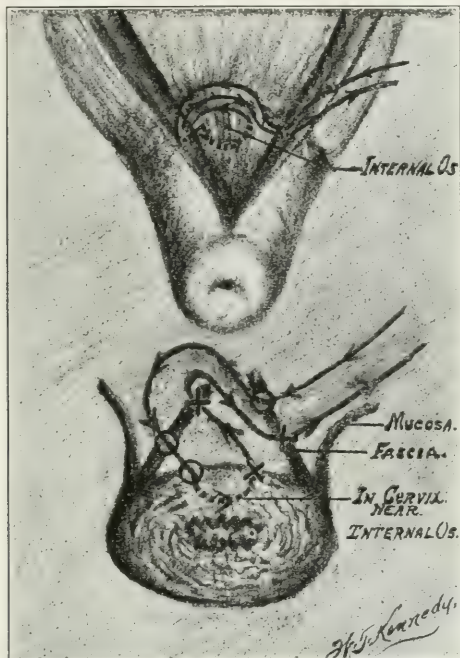


FIG. 7.—This demonstrates the transverse mattress suture which enters the cervix at the level of the internal os. The arrows show the direction of the suture and O and X the points that will be approximated by the suture. Thus the fascial edge on the left is drawn smoothly under the overlapping fascia and the lapped tissues are firmly attached to the cervix.

have always been able to demonstrate the bladder pillars even in elderly multipara with a long-standing prolapse.

With a finger under the mucosa as a guide on which to cut down, the thinned-out fascial edge is dissected with a knife from the underlying mucosa. The mucosa flap is made paper thin and as soon as possible Allis forceps are applied as tractors to the fascial and mucosal edges. This cutting dissection is continued from the midline, downward and upward, for a short distance laterally until by blunt



dissection a distinct line of cleavage is demonstrated the whole length of the primary incision. The mucosa is now easily separated, by blunt dissection, from the overlying pillars well out on either side to the "arcus tendineus." Thus is demonstrated the strongest and thickest portion of the fascia and gives us two fixed points from which to estimate the amount of overlapping necessary to take up the slack in the fascial sling. The dissection is quite extensive but is

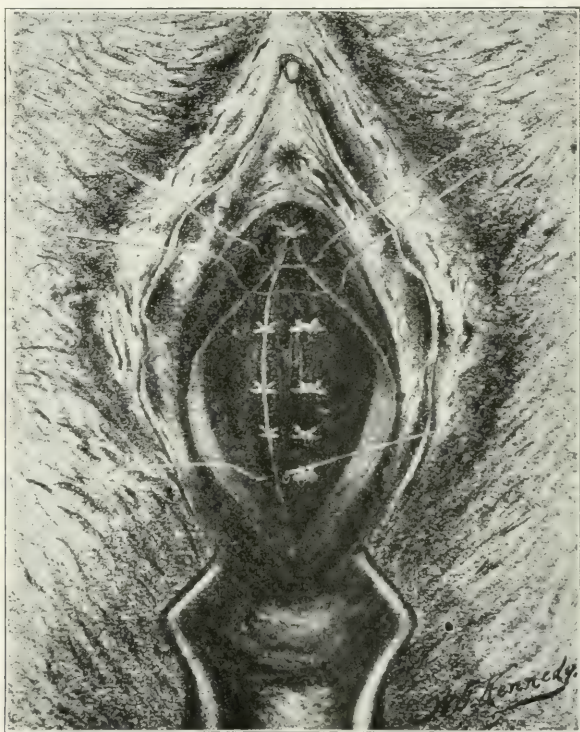


FIG. 8.—Lapping transverse mattress sutures tied; on the left the sutures holding overlapping free edge are all tied except the lower one. Above the sutures approximating the vaginal mucosa have been partly placed and tied.

comparatively free from bleeding unless by accident we injure the vaginal plexus of veins or the vaginal branch of the vesical artery which runs on the pubovesical ligament.

The bladder and its lateral true ligaments are now freely mobilized and the latter are overlapped from side to side by transverse mattress sutures of medium kangaroo-tendon, at the level of the internal os one or two sutures enter the cervical tissue. A reference to Figs. 6 and 7 will demonstrate better than words the technic and

function of these sutures. These sutures prevent anteroposterior shortening of the anterior wall of the vagina and draw the underlying fascia smoothly under the overlapping fascia. In addition the cervical suture reattaches the fascia to its original place on the cervix and forms a shelf on which the bladder rests (Figs. 6 and 7).

After the mattress sutures are tied, the free edge of the overlapping fascia is sutured, by interrupted sutures of fine kangaroo-tendon, to the underlapped fascia. The paper-thin vaginal mucosa flap, caused by our dissection, is now excised for a short distance on either side. Its edges are approximated in midline by interrupted suture of ten-day chromic catgut. To prevent a dead space between the fascia and mucosa a vaginal pack of iodoform gauze is used and is removed the fourth day after operation (Fig. 8).

#### SUMMARY.

1. This technic offers a strong and anatomical restoration of the supports of the bladder without causing anteroposterior shortening of the anterior wall of the vagina.

2. The technic gives promise of restoring the anatomical relations in the bladder and of preventing the many abnormal conditions as reported in a study of the after-results of cystocele operations by Broun and Rawls(6).

3. The method is applicable to all forms of cystocele but when there is a complete prolapse of the uterus, other methods must be used in addition, to relieve the injury to the posterior segment of of the "holding apparatus" and the injury to the "supporting apparatus."

350 WEST EIGHTY-EIGHTH STREET.

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## THE CONFLICT OF CLINICAL WITH MICROSCOPICAL EVIDENCE IN THE DIAGNOSIS OF TUBAL AND OVARIAN PREGNANCIES.\*

BY

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To the careful observer the removal from the abdomen of a woman, during the child-bearing age, of a tube or an ovary, plainly the source of a more or less copious hemorrhage, does not carry conviction that pregnancy in such structure was the prime cause. He demands more positive evidence of such ectopic pregnancy. If fetal structures are not promptly recognized by naked eye appearances he seeks the aid of the microscope. He will find in a considerable proportion of such cases no microscopical evidence of gestation. The symptoms of the illness may be very suggestive of pregnancy quite frequently. Having found a rather surprising number of such cases in my work and having seen many cases operated on in various clinics which, in my judgment, belonged to this class and which were promptly and conclusively diagnosed as tubal pregnancy by the surgeons operating, I have been led to again call your attention to this matter. Some of our members may remember I presented this subject to this Association in St. Louis in 1897. But as that was twenty years ago and a new generation is now with us I hope this repetition may be pardoned and, too, that occasion will not arise to present it twenty years hence.

The recognition of this type of hemorrhage in the nonpregnant state is not only of recent date. Scanzoni reported an autopsy he performed in the case of a young girl dying suddenly during menstruation. He found three liters of blood in the peritoneal cavity, that had plainly escaped from a ruptured ovarian follicle. It is probable exhaustive means to exclude ovarian pregnancy in that case were employed and I am inclined to believe the pathology present was quite similar to that of the many less severe cases we have encountered in recent years in which the absence of pregnancy was proven. E. B. Cragin was disappointed in twelve consecutive cases of supposed ectopic pregnancy that microscopical evidence did not

\* Presented at the Thirtieth Annual Meeting of the Southern Surgical and Gynecological Association, held at St. Augustine, Florida, December 11-13, 1917

confirm his diagnosis in six of them. He states these six had very good ectopic histories but proved to be ovarian and tubal hemorrhages. From an observer as careful as Cragin this evidence is very striking. Doran reported a case diagnosed as ruptured tubal pregnancy in which he found an *undilated* tube from the fimbriated end of which a large amount of blood had escaped, forming a large pelvic hematocele. A microscopical examination of this tube showed no evidence of either pregnancy or inflammation. Edgar reports one in which a supposed ectopic pregnancy proved to be a ruptured ovarian hematoma with a resulting large pelvic hematocele. Hind states that in one instance an emergency operation for ruptured tubal gestation was done and several pints of clots were turned out of the abdomen. The uterus and both tubes were normal but the left ovary was ruptured and oozing blood. The pathologist found only an apoplectic Graafian follicle with rupture of the ovary and no evidence of pregnancy. Bland-Sutton and Galabin twenty-five years ago stated that by no means must cases of hemorrhage in the tube be conclusively diagnosed as ectopic gestation. The literature teems with this variety of mistakes in diagnosis. But about 1890 the gynecological world was astounded by the epoch-making report of autopsies upon thirty-five women dying from ruptured ectopic pregnancy, made by H. F. Formad to the Pathological Society of Philadelphia. He had examined or witnessed autopsies on over thirty-eight hundred women and among them occurred these thirty-five cases of ectopic gestation. His analysis gave very impressive statistics. The women were all between the ages of twenty and forty years. "I may state that I now class hematocele of the tubes as ectopic pregnancy, even if no fetus is discovered" was one of his dicta. No case was beyond four months development, not one of extraperitoneal rupture of the sac was encountered, and he seemed to have firmly concluded that all intraperitoneal ruptures of the gestation sac cause death, and that those saved by operation were necessarily extraperitoneal. He gave the encouraging information to diagnosticians that the *uterus invariably contained a decidual membrane or very plain remnants of one if previously expelled*. The microscope confirmed this statement *in every instance*. All cases were of the working class or housewives in moderate circumstances and at the time of the fatal seizure were usually working—washing, house cleaning, carpet shaking or lifting. One case was ovarian, three interstitial and thirty-one tubal.

This report caused every surgeon and gynecologist to search "No man's land" for cases of ectopic pregnancy. Success attended



their efforts to such an extent that, all praise to their zeal, rupture was discounted. Lawson Tait and his American pupil, Arthur W. Johnstone, as well as that sturdy old New Englander, S. C. Gordon, attacked these cases at the moment of discovery as did Matthew D. Mann; others have since continued their work and to-day no condition of ectopic pregnancy except the extremely tragic ones, is considered too formidable for the only proper treatment, surgical. In the midst of this surgical industry was created the carelessness in diagnosis to such an extent that I feel justified in making this protest.

I have already mentioned the evidence of Cragin, Galabin and Bland-Sutton and in 1904 I reported ten cases I had encountered. J. Price, H. P. Newman, Griffith, Croom, Ruge, Goodell, Morrison, Doran, Edgar, Hind, Wilson and a host of others have reported such instances of diagnostic error.

Since the ten cases referred to were reported I have had nineteen cases, fifteen of them being tubal and four ovarian, of hemorrhage from the ovary and tube that could not be diagnosed as ectopic pregnancy at the time of operation. In three of the tubal cases and one of the ovarian the microscopical examination reports have not been received from the laboratory. Of the tubal hemorrhages but two were decided to be from ectopic pregnancy. In one a uterine decidua without chorionic villi, together with marked tubal laceration were the only criteria upon which we finally diagnosed tubal gestation. The other, that of a single woman of thirty-seven years, and never pregnant before, had suffered four months from almost continuous bleeding with pain in the right lower quadrant which forced her at times to go to bed. The outer half of the right tube had a transverse diameter of about 4 centimeters, the fimbriated end being dilated. It contained a coagulum of blood attached to the tubal mucosa by a pedicle 3 centimeters by 7 centimeters. The pathologist reported no fetus but that the tube showed the presence of villi and decidual formation. It is interesting to note that this positive proof of tubal pregnancy was present four months after the beginning of the tubal abortion. It has been claimed such evidence disappears in much less time than four months. We have then fifteen cases of tubal hemorrhage in three of which microscopical evidence is not available. In the twelve cases upon which microscopical examination reports have been made but two gave positive evidence of ectopic pregnancy. In the four cases of ovarian hemorrhage, three furnished negative reports as to pregnancy and one has not been decided.

## OVARIAN AND TUBAL HEMORRHAGE.

Ovarian hemorrhage may take place in a Graafian follicle or in the stroma.

Ovarian hematoma is a condition that has long been recognized. Peuch in 1858, declared ovarian apoplexy actually exists and may cause death; it may form a hematoma and may or may not be absorbed. The condition has been so often encountered as also have its, at times dangerous, associated conditions, that none should regard it as a myth or even a curiosity. Hemorrhage in the ovary occurs normally as it does in normal parturition. It may occur in Graafian follicles or in an ovarian cyst when the venous circulation of its pedicle is obstructed by twisting of, or pressure exerted on, that structure. It may occur in the stroma, constituting a true hematoma. It may occur in toxic conditions causing several accumulations of variable size like those found in the kidney and other organs, and which are noted in autopsies on patients dying of typhoid fever or other conditions having a local septic origin, such as puerperal sepsis or perforated gastric or duodenal ulcer (Wilson). Ovarian pregnancy is a rare cause. Hemorrhage into the stroma or into a follicle may occur in the newly born infant, fully developed, as in the case of Schultze; in quite young girls at or near the first menstrual period and in early adult life or during the child-bearing period, and may be accounted for in the noninfected cases by undue hyperemia notable during the first few menstrual periods. Great sexual excitement is believed to be a quite common cause. Wilson states there is one case on record of a woman who died from shock on the eve of her marriage as the result of a profuse intraperitoneal hemorrhage from a ruptured corpus luteum. In early menstrual life profuse and prolonged uterine hemorrhage is far more uncommon and it is urged by some writers that this is from the irritation caused by continued bleeding from the ruptured Graafian follicle. Probably you are all familiar with Scanzoni's case of a girl dying from such profuse follicular hemorrhage during menstruation. At autopsy he found three liters of blood in the peritoneal cavity. A considerable number of cases have appeared in literature, like that of Fordyce, in which women, especially girls, exposed to cold and wet immediately preceding, or very early in, a menstrual period have been the victims of ovarian hemorrhage so great in amount as to demand immediate abdominal section. In the inflammatory cases a quite well-defined sclerosis of the ovary has taken place, giving rise to excessive formation of connective tissue in the ovary with fatty degeneration of the

blood-vessels, which rupture easily. It is probable in such a changed state, expulsion of the ovum is retarded and the consequent prolonged congestion provokes hemorrhage into both the follicle and the stroma. When rupture of the bleeding ovary occurs, whether naturally from a Graafian follicle or pathologically from overdistension due to blood accumulated in its stroma, free exit is given to escaping blood and hemorrhage is encouraged, more especially during ovular hyperemia. The rapidity of the flow of blood varies from a few drops to such large quantities, as have been mentioned.

Schroeder states that rupture of a Graafian follicle may in exceptional cases be followed by so profuse a hemorrhage that it can (1) prove fatal; (2) cause peritonitis which may terminate fatally; (3) produce an encapsulated blood clot in the peritoneal cavity, and (4) produce a retrouterine hematocoele.

Tubal hemorrhage is not so well understood as is that from the ovary. While ectopic pregnancy is the active agent in its production in a preponderating proportion of cases yet no one can doubt its occurrence quite frequently in postinfectious conditions and in some instances reports have distinctly stated that neither inflammation nor pregnancy was evident. In my judgment the cases in which local pregnancy, the result of infection, or traumatism, are absent, must be extremely rare. The relation of ovarian and tubal hemorrhage to intraperitoneal hematocoele needs no elucidation from me.

*Causes of Error in Preoperative Diagnosis.*—It is not difficult to understand how before operation the pelvic condition may erroneously be diagnosed as ectopic pregnancy in its early months. Nor can one blame the operator who diagnoses this condition at operations, if he recovers a fetus or other fetal structures, readily recognizable microscopically. But to insist on such diagnosis at the time and later, in the absence of such evidence, is carelessness, or worse. The aid of the microscope is absolutely necessary in this situation. The age of the patient, her record as to pregnancies and recent amenorrhea, the nature of the attack, particularly the character of its onset and its subsequent history, as to shock, internal hemorrhage and metrostasis; each offers opportunity for error inasmuch as they are so identical in both conditions in early cases or even those that have progressed for several weeks or a few months after the onset of the attack.

Ovarian hemorrhage has often been found in the newly born infant, but not later until the full development of the ovary has been accomplished, which is generally regarded as being indicated by the establishment of the menses. At this time the second age

point of ovarian hemorrhage is reached and the confounding of this condition with ectopic pregnancy. The patient is now in her procreative period of life and may have either condition. In ectopic pregnancy a history of sterility for several years is common. All of Formad's cases had previously aborted or borne children. The cases cited of Cragin, Doran, Fordyce, Hind, Lee, Wilson, myself and many others gave this history. As to amenorrhea, it seems to be as constant in the nonpregnant as in the pregnant types being considered. The ectopic gestation patient may have had a mild onset. Steffarson, who studied 1000 cases of this form of pregnancy occurring between 1897 and 1907, states (1 c., p. 99) "the investigation of the histories of the ruptured cases shows, in the main, that primary rupture may occur with little or no pain." Many of the case reports of the nonpregnant cases under consideration mention the gentle onset. And again in either contrasted condition the onset may be very acute and almost tragic from the suddenness and degree of the localized pain, the shock, collapse, etc. Gaillard Thomas' patient was stepping into a carriage when the sudden localized pain and collapse occurred that was recognized as rupture of a tubal gestation. Edgar's patient in whom he found a ruptured ovarian hematoma was undressing to go to bed when her seizure was similar and Hind's of the same condition, was similarly attacked. In the slow cases—probably among the tubal pregnancy patients the tubal abortions most commonly, the prolonged uterine bleeding is a feature of both the pregnant and nonpregnant conditions. In fact, no man is wise enough, in my judgment, to distinguish before operation between early ectopic pregnancy and ovarian and tubal hemorrhage, except he have special evidences of pregnancy, such as breast signs, gastric disturbances of short duration or knowledge of the uterine interior. And I need not attempt to instruct you in respect to those features. If upon operation no further evidence of ectopic pregnancy is found the diagnosis of that condition must be discarded.

To further illustrate the difficulty encountered in arriving at a diagnosis in some cases of ruptured tubal pregnancy even when the history is quite clear is presented the following case:

Carry T., twenty-three years, colored, married, admitted to Columbia Hospital for Women June 10, 1910, complaining of pain in lower right quadrant, epigastrium and head; had had one child and one miscarriage. First menses occurred at age of fifteen, has been irregular, profuse and painful, usually lasting seven days, last period began about May 26. Last night was attacked with severe pain



in lower part of abdomen, radiating to the back, nausea and vomiting. At seven that evening felt a sudden severe, colicky pain in the lower right quadrant followed shortly by vomiting. There was no bleeding at the time but four days later while in hospital, began to menstruate, the scant flow continuing for three days.

Operation, June 17, double salpingo-oöphorectomy. Both tubes found enlarged and adherent, neither containing fluid except as follows:  $\frac{1}{4}$  inch from cornu the right tube was flattened out into a ragged elliptical area about 1.5 by 2 cm., believed to be covered with mucosa. A large amount of old blood clot, the largest being 5 to 7.5 cm. in diameter and near cecum, was found in the pelvic portion of the peritoneal cavity and extending above the cecum.

The uterus was normal in size and in good position. The right appendage was referred to the late Dr. Jno. S. Neate, pathologist, Army Medical Museum, who reported as follows: "Specimen consists of one tube and an enlarged and distended ovary. The tube enlarged, but not more than  $\frac{3}{4}$  inch in diameter, presents a rupture at juncture of outer and middle third, about  $\frac{3}{4}$  inch. long with everted, thick edges. Numerous sections taken, by the class at the Museum, through the rupture and the proximal and distal portions. No evidence of fetal tissue, practically no decidua. A small amount of purulent exudate in ruptured portions; the lumen is open on each side with little change in mucosa. Evidently one or more diverticula in the tube since no contortion of tube would give the picture seen. Not entirely demonstrable but clearly suggested that ovum must have reposed in pocket of diverticulum. Musculature of tube unusually thick, ostium would have allowed of abortion if in proper lumen or in walls of tube. Inferred that ovum or fetus must have been young one. Ovary shows beginning of adenomatous cysts with marked sclerosis. In areas little or no ovarian tissue; very few diseased follicles. Noted that corpus luteum must have formed in opposite ovary. Specimen is peculiar in presenting so little evidence of ectopic pregnancy, apart from the ruptured tubal walls."

This case shows presumptive microscopical evidence of ruptured tubal gestation and microscopical and clinical pictures but little more positive.

THE ROCHAMBEAU.

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## THE EFFECT OF INGESTION OF DESICCATED PLACENTA DURING THE FIRST ELEVEN DAYS OF LACTATION.\* A PRELIMINARY REPORT.

BY

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ONE of the most unsatisfactory phases of obstetrical and pediatric practice has been the care of infants who have been deprived of their mother's milk through a failure on the part of the mammary gland to supply the demand made upon it. While in many cases this lack of secretion can be explained by such factors as malformation, constitutional diseases, including tuberculosis, etc., yet it is nevertheless true that in thousands of apparently normal, healthy, women, no cause for the deficiency can be stated.

In carefully analyzing and comparing various similarities between labor and lactation in the human and in the lower animals, it has been noted that one important difference exists, *i.e.*, in practically all of the lower animals, the placenta is eaten immediately after its expulsion, while in the human nothing of the kind has ever been noted, even among the lower races. This is extremely significant

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when the horse and the cow are considered, since these are well-known examples of herbivorous animals, and under practically no other conditions become carnivorous. It must furthermore be noted that deficiency of milk during the period of lactation is practically unknown among the lower animals.

From this we concluded that possibly the ingested placenta might have some influence upon lactation. A perusal of the literature shows that this idea is not original with us, but has been the subject of several investigations during the past five years. Fellner(1) and Biedl and Königstein(2) concluded that the injection of placental extract caused a hypertrophy of the mammary gland. Basch(3), Lederer and Pribram(4), Aschner and Grigoriu(5), and Niklas(6) claim that an increase in the amount of milk followed these injections. From these and many other articles it seems justifiable to conclude that the placenta exerts some action upon the breasts.

Feeling that further experimental work might disclose some facts which had not been previously reported, and would, if the results were at all positive, stimulate further research, we decided to feed desiccated placenta to a small series of cases and note the results. Dr. Frederick S. Hammett, Chief of the Department of Biochemistry, was interested in the problem, and very kindly consented to do the chemical work.

*Outline of Procedure.*—Sixteen healthy patients on my service at the Los Angeles County Hospital, were selected prior to delivery. The diet was the same for all throughout the period of study. To eight of the patients was given desiccated human placenta, in a dosage of 10 grains 3 times a day, from the time of delivery until they left the hospital, on the twelfth day. The desiccated placenta was administered in gelatine coated capsules. The remaining eight patients were used as controls, and were treated in exactly the same manner as were the first group, except that they did not receive the desiccated placenta. The milk was collected from each patient by means of a sterile breast pump, on the third, fifth, seventh, ninth, and eleventh days. Since our patients are discharged from the hospital on the twelfth day following delivery, a longer study was impracticable on account of the great variation in diet.

The babies were weighed at the time of delivery and once daily thereafter.

*Preparation of the Desiccated Placenta.*—The placenta was placed in a sterile vessel immediately after its expulsion, and taken to the laboratory, where it was passed through a sterile meat grinder several times. This fine pulp was mixed with a small quantity

(5 or 10 c.c.) of toluene, to prevent decomposition, and spread in a thin layer over a large sterile glass plate. An air current from an electric fan was then thrown upon it for about forty-eight hours, at the end of which time it had the appearance of a thin, leathery, rough, sheet of parchment. This mass was then ground as fine as possible, and dried for twenty-four hours over sulphuric acid in a partial vacuum at room temperature. It was then reground to a fine powder, and administered in carefully weighed, 10-grain capsules.

*Chemical Methods Used.*—All of the analytical work was done by Dr. Hammett. The total nitrogen, fat (lipoids) and lactose were determined in the fresh milk, which was sent to the laboratory immediately after collection. The total nitrogen was estimated by the microchemical modification of Kjeldahl's method, devised by Folin and Farmer(7). The fat was determined by Meig's(8) method. The lactose was determined in the protein-free filtrate by the use of Fehling's solution, with occasional polariscopic corroboration.

*Comparison in the Chemical Composition of Milk in the Controls and in the Cases Which were Fed Desiccated Placenta.*—A detailed report of the variations in the chemical composition of the milk in the controls has been reported by Hammett(9). The analytical results in those cases which were fed desiccated placenta were reported by Hammett and McNeile(10). From these papers the following averages have been calculated and tabulated.

TABLE I.—DAILY AVERAGE PER CENT. OF PROTEIN, FAT AND CARBOHYDRATE IN CONTROLS, AND WHEN DESICCATED PLACENTA IS FED.

Day	Controls			Desiccated placenta		
	Protein	Fat	Lactose	Protein	Fat	Lactose
3	3.52	4.34	5.43	2.87	4.35	5.71
5	1.74	2.88	6.08	1.94	2.58	6.37
7	1.61	3.80	6.21	1.91	3.72	6.35
9	1.69	3.70	6.32	1.92	3.00	6.57
11	1.46	3.38	6.42	1.54	3.73	6.75

It will be seen from these results that the ingestion of desiccated placenta apparently has some effect upon the chemical composition of milk. In these cases it is seen that there is a decrease in the percentage of fat, a slight increase in the percentage of protein, and a more marked increase in the percentage of lactose. These changes were constant in each of the cases which were studied, and



the figures represent not only the averages, but to a very marked extent, the variations in each individual case.

*Effect upon the Weight Curves of the Infants.*—In addition to the changes in the chemical composition of milk, induced by the ingestion of desiccated placenta, we were also interested in the possible effect which this might have upon the weight of the infant. The detailed results have been reported by Hammett and McNeile(11). Tables I and II are taken from this article.

TABLE II.—WEIGHTS DURING THE FIRST ELEVEN DAYS AFTER BIRTH, OF THE INFANTS RECEIVING MILK FROM THE MOTHERS WHOSE PRODUCTION WAS UNINFLUENCED BY THE INGESTION OF DESICCATED PLACENTA.

(Weight given in ounces.)

Infant number	1	2	3	4	5	6	7	8
1st day....	118	148	120	120	119	104	96	144
2d day....	108	138	116	111	114	98	91	143
3d day....	107	130	114	107	112	100	94	131
4th day....	109	129	109	110	106	102	94	135
5th day....	106	129	112	111	105	104	100	134
6th day....	105	132	114	104	106	104	96	134
7th day....	108	131	112	104	108	104	98	141
8th day....	108	130	108	102	107	107	91	143
9th day....	105	129	109	105	108	104	91	149
10th day....	108	128	108	112	103	107	93	146
11th day....	108	129	108	114	104	107	96	148

TABLE III.—THE WEIGHTS DURING THE FIRST ELEVEN DAYS AFTER BIRTH, OF THE INFANTS RECEIVING MILK FROM THE MOTHERS WHOSE PRODUCTION WAS INFLUENCED BY THE INGESTION OF DESICCATED PLACENTA.

(Weights given in ounces.)

Infant number	1	2	3	4	5	6	7	8
1st day....	150	119	111	135	144	76	114	123
2d day....	138	115	108	123	142	72	112	117
3d day....	133	112	101	123	136	71	107	121
4th day....	134	112	100	123	136	72	108	122
5th day....	140	113	99	124	138	72	110	119
6th day....	140	114	100	123	143	72	106	126
7th day....	142	115	100	124	146	73	104	126
8th day....	145	118	102	124	147	76	106	124
9th day....	149	118	101	124	144	76	108	118
10th day....	153	116	99	128	144	75	106	126
11th day....	150	116	98	130	143	75	108	126

TABLE IV.—DAILY AVERAGE BIRTH WEIGHTS OF INFANTS WHOSE MOTHERS RECEIVED NO DESICCATED PLACENTA, COMPARED WITH WEIGHTS OF INFANTS WHOSE MOTHERS DID RECEIVE THIS PRODUCT.

(Weights given in ounces.)

Day	Mothers did not receive desiccated placenta	Mothers received the desiccated placenta
1	120.7	121
2	114	116
3	112	113
4	112	113
5	105.5	114
6	110.5	114
7	113	116
8	112.4	118
9	112.4	117
10	113	118
11	114	118

These weights have been shown graphically in Chart 4. It will be noted that the average weight of the infants whose mothers were fed desiccated placenta is several ounces greater than the infants whose mothers did not receive this agent.

#### DISCUSSION.

Since no previous work has been reported, except that of Van Hoosen(12), having as its object the possible use of some preparation of the placenta as a galactagogue, the use of desiccated placenta in the dosage of ten grains three times a day was purely experimental, and may have resulted in less pronounced effects than would be obtained if the dosage had been larger. Van Hoosen(12) used a single dose of thirty grains, and intimates that in her future work she will employ much larger doses.

Since this investigation has been stimulated by a desire to investigate the cause and effect of the ingestion of the placenta immediately after its expulsion in the lower animals, and to determine, if possible, the possible effect if a similar condition is brought about in the human, the question of a single, large dose, rather than divided doses over a long period, should receive some consideration. If any effect is demonstrated, it seems reasonable to suppose that it may be due to an internal secretion elaborated by the placenta, or to some hormone peculiar to that organ. These questions will be considered in our future work.

It is unfortunate that circumstances have made it impossible to observe the patients over a longer period of time. While the weights of each series of infants, when compared in Chart 4, apparently show a less marked initial loss of weight, and a more rapid gain, in the infants whose mothers received desiccated placenta, than is shown in the infants whose mothers did not receive this agent, yet it must be admitted that the difference is relatively slight, and might be changed in a larger series of cases.

The human placenta may possibly, as a result of the factors which have made lactation in woman a serious problem, lack certain properties which are still retained in the placenta of lower animals. We will in our next series of cases, substitute the bovine placenta for the human.

While the most pronounced effect is apparently produced upon the lactose in mother's milk, after desiccated placenta is fed, yet a careful analysis, calculating percentage of increase in the cases fed desiccated placenta, over the controls, fails to show a substantial gain.

It was noted in several instances, during this investigation, that the mother's milk in the control became so scant that the infant had to be placed upon a formula, and both control and case receiving desiccated placenta dropped from our investigation. In no instance was there a deficiency in milk among the cases which were fed desiccated placenta, and in several cases, giving a history of agalactia during previous lactations, the increase was attributed to the use of the agent.

#### CONCLUSIONS.

The results of this investigation do not warrant any definite conclusions. In the cases which were fed desiccated placenta there was apparently some change in the chemical composition of the milk during the first eleven days postpartum. The most marked change was an increase in the percentage of lactose and this was accompanied by a slight increase in the percentage of protein, and a slight decrease in the percentage of fat.

There was no deficiency in the amount of milk in any of the cases receiving desiccated placenta, but the reverse was true in the cases which did not receive this agent.

There was apparently a slight decrease in the initial loss of weight in the infants of mothers receiving the desiccated placenta, over those whose mothers did not receive it, and at the end of eleven days

the babies whose mothers received the agent were about four ounces heavier than those who did not.\*

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PYELITIS COMPLICATING PREGNANCY.<sup>1</sup>

BY

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PYELITIS complicating pregnancy does not differ materially from pyelitis which occurs under other conditions. When it occurs as a complication of pregnancy it does, however, decidedly modify the condition of the patient, the fetus, and the course of gestation. It may occur in early pregnancy, although it is rarely found before the fifth month. In the very large majority of cases it makes its first appearance in first pregnancies and may reoccur in succeeding

\* To Dr. Frederick S. Hammett are due my acknowledgments for the most careful analytical work which was done in connection with the examination of some 125 specimens of milk. Without his aid this work would not have been possible. I wish to thank Dr. Wm. A. Swim, House Surgeon on my service at the Los Angeles County Hospital, for his most efficient and painstaking work in collecting the specimens and supervising the administration of the desiccated placenta, and to the many others who have aided in this investigation.

<sup>1</sup>Read at a meeting of the New York Obstetrical Society, November 13, 1918.



pregnancies. Not all women who have long slender waists and short anteroposterior depth of abdomen are victims of pyelitis when pregnant, but pregnant women who suffer from pyelitis quite generally conform to this type. The danger to the mother is the severe infection, permanent damage to one or both kidneys with, occasionally, extension of the infection to other regions. The danger to the fetus is death *in utero*, premature delivery before viability, or, in a condition so weakened that life is continued, if at all, only under many difficulties.

With rare exceptions, the offending agent is the bacillus coli communis.

The clinical picture as we have observed it, and substantially as others have reported, is that the patient is early in the fifth month of her first pregnancy. She has suffered for several days from general malaise, abdominal discomfort and a sense of heaviness, with a dull pain over the region of the affected kidney. Then there is a feeling of chilliness, or a decided chill and a rise of temperature to 102° or 103° F., or even higher. The pulse range is in the neighborhood of 100. Constipation is an invariable complication. Not infrequently there will be a definite history of daily evacuation. A vaginal examination will disclose the rectum full of fecal masses as far up as the examining finger can reach. Urinalysis shows acid urine, excess of indican, a considerable quantity of pus and hyaline casts. Distinct tenderness is found on palpation of the affected kidney region. In a few cases we have found liver tenderness, a muddy pallor of the skin with easily recognizable jaundice of the sclerotics. Beyond a moderate vesical congestion, cystitis is not found early in the attack. The urologist, in catheterizing the ureters, usually reports the obstruction at the point where the ureter crosses the pelvic brim and is compressed by the gravid uterus; ordinarily on the right side, less often on the left. Rarely both ureters are compressed. In the cases in which both ureters are involved, one is decidedly infected and obstructed and the other to a much less degree. We do not expect to find both ureters markedly obstructed and the kidney pelvis infected in the same patient. It is common to see the urine flow from the ureteral catheter on the affected side in a well-defined stream until the ureter and kidney pelvis is empty; while from the other catheter it comes in the characteristic drop.

Several factors enter into the make-up of the causes which finally result in pyelitis complicating pregnancy. By the fifth month the pregnant uterus has become a tumor mass of considerable size,

which in the roomy abdomen tends toward anteversion against the anterior abdominal wall, which in turn stretches and yields to this pressure. In some primiparæ with abdomen of small capacity and well-developed abdominal muscles, this anteversion is not allowed; the uterus is forced back toward the spinal column, being crowded somewhat downward, so that it tends to occlude the pelvic brim, impeding the passage of the intestinal contents and resulting in intestinal stasis and constipation. With this stasis and accompanying fermentation there is an overproduction of colon bacilli. At the same time, there is compression of one or both ureters, partly occluding the ureter affected, distending it and the kidney pelvis and thus forming a reservoir of stagnant urine which by back pressure congests the kidney and impedes its normal activity. Through the lymphatics and probably through the blood stream, the overflow of colon bacilli find their way into this accumulation of stagnant urine which proves a favorable soil for their further development. Inflammation of the pelvis of the kidney appears with the formation of increased mucus and pus.

In Cesarean operations we are able to note the position of the uterus. More often than not it is turned on its long axis toward the right side, occasionally its anterior wall faces directly forward, rarely we have found it decidedly turned toward the left side. This usual dextrotorsion of the uterus, whatever its cause, by its pressure upon the right ureter as it crosses the brim of the pelvis, probably helps to account for the more general occurrence of pyelitis on the right side. The somewhat lower position of the right kidney and the fact that the prolapsed or floating kidney is more often found on the right side may have some bearing upon this condition. It is conceivable that malformations or kinks in a ureter may retard the flow of urine through it and either by itself or in conjunction with pressure upon it by the gravid uterus prove to be a causal factor in the pyelitis of pregnancy although no such malformations, strictures nor kinks have been reported to us in the cases which have come under our observation. Tubercular processes may extend from neighboring regions. We recall the case of an elderly primipara who in childhood had tubercular hip-joint disease from which she recovered with an ankylosis of the hip. She regained sound and vigorous health and for many years was a very active and hardworking saleswoman. She married rather late in life and became pregnant. During late pregnancy tuberculosis of the bladder developed, later extending to both kidneys, terminating fatally in about five months after the birth of her full-term child. The autopsy showed much

destruction of the bladder. The right kidney was a sac of pus with no kidney structure to be found. About two-thirds of the left kidney was a tubercular abscess, the remaining third of the kidney was studded with small tubercular abscesses. It is worthy of note that the progress of this condition was somewhat gradual and that life continued for some time while there could have been only a small portion of functioning kidney tissue left.

A number of years ago a case of puerperal sepsis came under our care. The more acute stage had passed and a considerable exudate had formed to the right of the uterus and above the level of the fundus. To this condition the characteristic symptoms of right-sided pyelitis were added. It was found that the bladder had been drawn up to the right side and distorted so that the right ureter was catheterized only after great difficulty. A considerable quantity of urine containing pus was withdrawn. A weak solution of formalin was instilled into the pelvis of the kidney resulting in abrupt cessation of the symptoms of pyelitis. In this case the stagnation of urine in the ureter was due to partial stenosis of the lower end by its inclusion in an inflammatory exudate. By catheterizing this ureter drainage was reestablished and a cure promptly followed.

From observation of patients and the study of histories of hospital and private cases it is evident to us that there is a rather large number of pregnant women who suffer from a mild form of pyelitis. We see these cases in our hospital service. They remain under treatment for a time, are cured and are dismissed into the care of their family physician from whom we not infrequently learn that pregnancy has continued to term without recurrence of the pyelitis. Other patients return to us with repeated attacks, sometimes of increased severity. From the fact that cases of pyelitis of pregnancy come to our service after having been treated for a previous attack in another hospital, shows that some of our so-called cured cases probably have subsequent attacks and find their way into other hospitals. We must, therefore, conclude that a woman who has had her pregnancy complicated by pyelitis, even though of mild degree and apparently cured, is liable to subsequent attacks or a continuous form of pyelitis. Such a patient should be under rather close observation throughout the remainder of her pregnancy and as long thereafter as symptoms are present and pus and kidney elements appear in the urine. A considerable number of such patients are in danger of permanent and extensive kidney injury and require the care of a skilled urologist if this is to be avoided.

One primipara had an attack of pyelitis during the fifth month of her pregnancy, recovered and insisted upon going home. She returned in a similar condition during the seventh month; after a time went home, returning again near full term with high fever, very ill and was delivered of a macerated fetus.

The course of a private patient may illustrate several points. A primipara, twenty-one years of age was threatened with abortion at the third month. By rest in bed, mild opiates, etc., the uterine contractions and bleeding ceased and this danger was successfully passed. Quite early in the fifth month she developed characteristic symptoms, dull pain over the upper part of the right side of the abdomen and back, moderate tenderness over the right kidney, slight enlargement and tenderness of the liver, decided pallor with jaundice of the sclerotics, with extreme prostration and anorexia. The urine was acid, of high specific gravity, concentrated, had excess of indican, much pus with hyaline casts and albumin. By culture the urine was shown to contain a large number of colon bacilli. Both ureters were catheterized. On the right side decided obstruction was found at the point where the ureter crossed the pelvic brim and was compressed by the pregnant uterus. A considerable quantity of retained urine was withdrawn, flowing from the catheter in a well-developed stream. To a much less degree a similar condition existed in the left ureter. The bladder showed moderate hyperemia. After this there was temporary improvement. The patient, however, remained very ill in bed requiring the continued attention of a nurse until her premature delivery September 8, 1916, at the end of seven months and one week of her gestation. The child weighed 4 pounds and 12 ounces a week after its birth and is still living and thriving. After a few days it nursed, securing plenty of nutrition from its mother and developed very satisfactorily until the last week in December, 1916, when it suddenly became cyanosed and stopped breathing. Respiration was established with difficulty by the nurse. An enlarged thymus was found and apparently cured by a few applications of the x-ray. Soon after this attack bottle feeding was resorted to. The mother after an uneventful puerperium had gained 20 pounds in weight. The urine showed a few pus cells, traces of albumin and an occasional hyaline cast. During the two months from the onset of pyelitis until premature delivery it was found necessary to catheterize the ureters 4 times and instil a weak solution of silver nitrate. Constipation was overcome by mild laxatives, occasional small doses of calomel and daily colonic irrigations. A daily hot



bath was given. Urotropin was used freely; methylene blue was tried but each time promptly vomited. Bulgarian bacilli were given throughout this time and an occasional injection of autogenous vaccines. While good results may have followed the use of these two agents, they were not decidedly apparent. The diet at first was only milk in considerable quantity, with large quantities of plain water and Vichy. The knee-chest posture was resorted to for ten minutes several times each day thereby allowing the uterus to fall forward, removing pressure and favoring drainage through the ureters. Promptly after each catheterization of the ureters, which caused the patient very little pain and discomfort, quite decided uterine contractions began. These contractions while very evident were not painful to the patient. They were soon checked by the free use of opium. For about two weeks prior to delivery ureteral catheterization had not been resorted to. Uterine contractions began and increased in force and frequency. Suppositories, each containing a grain of opium were used every four hours until the maternal respiration was twelve per minute, without checking the contractions. An easy delivery followed after about fourteen hours and in spite of the use of 3 grains of opium during the first twelve hours, respirations in the baby were spontaneous. We believe that this child owes the continuance of its intrauterine life up to a very precarious viability to the skilful urological care of Dr. H. G. Bugbee, and no less important, its very unpromising start in extra-uterine life and through its thymus crisis to the prompt and wise management of Dr. C. G. Kerley. The patient made an uneventful recovery and became completely well again. Her last menstruation appeared February 28, 1917. In the third month, after a rather long motor ride, an abortion threatened, with uterine contractions and moderate bleeding. With rest and care this condition subsided. Pregnancy thereafter was uneventful. There was no noteworthy abnormality in the urine. Quiet life in the country kept the general health in better condition than during the first pregnancy. During the first week in August, 1917, at approximately the fifth month of her second pregnancy, a pyelitis again appeared but not so severe as during the previous year and subsided in about a week. There was an interval of about two weeks of good health followed by a more severe attack with characteristic urine changes and evening temperature to 102° F. for several days. Ureteral catheterization was used once and with other treatment the condition promptly cleared up. The patient moved to another city late in September. Pregnancy continued uneventful until the completion of the eighth

month, when the easy delivery of a well-formed male child weighing between 6 and 7 pounds was reported.

During the past winter we have seen a considerable number of undoubted mild cases of pyelitis complicating first pregnancies which responded promptly to rest in bed, colonic irrigations, hot baths, forced fluids and urinary antiseptics, knee-chest posture, etc., without catheterizing the ureters. At one time we had in our Service four cases decidedly ill because of pyelitis complicating their first pregnancies. With other treatment all had ureteral catheterization, one was catheterized twice. All recovered and continued well. The patient who was twice catheterized gave a history of having been under treatment in another hospital. She left there and remained at home six weeks under the care of her family physician, and was very ill all of the time. We note that there may be wide variance between that which consultants say and what a patient is able to report that they have said. One consultant is reported as having advised drainage by incision over the kidneys. Such a course appears to us as very radical and unwarranted. Another advised emptying the uterus. If necessary, this would have been a much safer course to have followed. This patient although very ill when admitted, recovered under the treatment outlined, including catheterization of the ureters twice, and remained in the hospital without symptoms throughout the rest of her pregnancy and her puerperium. She was delivered at about the eighth month after normal labor, of a small child which lived and was gaining when discharged with its mother.

In the foregoing histories treatment has been fairly well indicated. In only a small proportion of cases of pyelitis of pregnancy is ureteral catheterization indicated. It is not advisable for any one to attempt this, however, unless specially skilled in the necessary maneuvers, otherwise traumatism and pain will surely result from the manipulation of passing the ureteral catheters. In the hands of a trained urologist, who by long experience and constant practice has acquired deftness and unerring skill, I have never noted harm to follow ureteral catheterization. I regard a partially occluded ureter distended with infected urine in the nature of an abscess and that the passage of a catheter results in free drainage of the same.

42 EAST THIRTY-FIFTH STREET.

## AN ESTIMATE OF RADIUM THERAPY IN UTERINE CANCER.\*

BY

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THE use of radium in the treatment of cancer offers one of the interesting and important problems in modern medical research. The present work of the Memorial Hospital is largely devoted to the study of this problem, for which it is maintaining an active clinical service in close association with laboratory research. Through the interest and generosity of Dr. James Douglas we have a large supply of radium and a new building equipped with a physical, chemical and pathological laboratory. In the chemical laboratory an extensive work is in progress on the chemical changes of the blood of cancer patients. The physical laboratory is equipped for research work on the physics of radium, and for the preparation of radium emanation for therapeutic use. For this purpose there is an apparatus for pumping the radium emanation into capillary glass tubes, an instrument for measuring the amounts, and a machine shop for making and arranging applicators for the different lesions.

In the clinical service patients are admitted for observation, laboratory study and treatment. At the present time observation of the changes which radium produces upon tumor growth in all parts of the body is being made on about 400 patients. New patients for treatment require three, four or more days' stay in the hospital, in order that the medical records, physical examinations and laboratory tests be made. Sufficient time must also be allowed for the patients to recover from nausea and slight malaise which the applications of radium often incite. Treatment must often be delayed, because in a service in which so many different lesions are being treated, the cases must be grouped in order to save unnecessary handling of the radium in the physical laboratory. The patients are given written instructions when to return for observation or subsequent treatment, and the medical record of each patient is kept in the record room in open file until the patient is known to

\* Read at a meeting of the New York Obstetrical Society, December 11, 1917.

be dead, or until three months after the patient or friends have failed to respond to our follow-up correspondence.

There are now over eighty patients with uterine cancer who are being observed and treated with radium under the direction of Dr. Bailey, to whom the hospital is indebted for a successful development of the technic of application. The writer, whose work includes the observation and study of cancer in the different regions of the body is especially indebted to Dr. Bailey for the opportunity which his cooperation has offered for the study and discussion of his material, and this paper will not include a statistical report of results or any discussion of technical detail.

The primary lesions are most often in an advanced stage of the disease, but during the past year a number of patients, referred to the hospital by the general practitioner or recommended by friends of our old patients, have had less advanced lesions, and we are encouraged to believe that as the knowledge of the benefits to be derived from the use of radium becomes more general, patients will become less fearful of the use of the knife and will seek professional advice earlier.

From the standpoint of therapy the primary lesions may be classified as: 1. Extremely advanced. 2. Advanced. 3. Borderland. 4. Early.

*Extremely advanced lesions* include those in which all of the pelvic structures appear to be palpably involved, forming either bulky tumors in the upper part of the pelvis and often extending far down into the septa between the vagina and rectum or bladder, with comparatively little ulceration in the vaginal vault, or, there may not be a bulky tumor, but a large dugout ulcerating crater, surrounded by a mere shell of tumor tissue closely adjacent to the rectal and bladder walls. We read that in some clinics the use of radium is not denied to any case no matter how far advanced the lesion may be, but at the Memorial Hospital we believe that such a plan is inadvisable. We are often surprised to find an extremely advanced lesion in a patient whose general nutrition and appearance is that of a fairly healthy woman, suffering little or no pain, hemorrhage or discharge. In such cases it may often be wrong to apply any local treatment. The application of radium may slightly reduce the bulk of tumor tissue, but in so doing it hastens the breaking down of poorly nourished tissue, produces an extensive sloughing area, and precipitates the terminal features of the disease. If the tumor growth has extended far down into the tissues between the vagina and rectum or bladder, the application may be particu-



larly injurious, as an inch or two of tumor tissue in these locations is infinitely more comfortable for the patient than a bladder or rectal fistula. Any interference with the nutrition of a tumor is an important factor in the result of radium therapy of tumors in all parts of the body. A bulky and necrotic tumor never shows any improvement. In those lesions which present an extensively ulcerating crater, surrounded by a thin shell of tumor tissue, radium may produce most disastrous results in the premature production of rectal and bladder fistulæ. They belong also to the slowly growing epitheliomatous type, and a patient may live bedridden in this condition for a year or more. It is in this class of cases that the Percy cauterization has produced similar disastrous results, and, if used in a less advanced stage of this type, produces a lesion which is unsuitable for a subsequent application of radium. In a few extremely advanced cases, however, if the nutrition of the tissues appear to be good, the application of a large amount of heavily screened radium, applied in a pack at some distance from the normal tissues overlying the tumor, will afford a surprising amount of relief from pain. A cycle of x-ray treatments to the lower abdomen may produce a similar result.

*Advanced cases*, in which the parametrial tissues are definitely infiltrated, but in which there is a palpable limitation of the tumor process, have furnished a field in which radium has already demonstrated its capacity to arrest the progress of the disease, and to restore health more frequently than any other agent. At the Memorial Hospital Dr. Bailey's technic accomplishes it with little or no discomfort to the patient, and within a few months his own publication of actual results will materially add to those he has already recorded. In judging the probable result of a given case, a knowledge of the histology of the tumor may furnish valuable aid. The adenocarcinomatous type is quite regularly more susceptible to the action of radium than is the infiltrating epithelioma. Uterine sarcoma is comparatively rare. The writer has observed the effects of radium in two cases. One was a very rapidly advancing lesion following an operation with the cautery, and the radium treatment was without benefit. In the other a complete disappearance of the gross lesion was observed. Certain forms of sarcoma in other regions of the body yield more easily to radium therapy than the carcinomata. Bulky retroperitoneal extensions from certain teratoid or sarcomatous tumors of the testicle melt away within a few weeks.

The changes produced in the tumor tissue of an advanced uterine

lesion by an effective dose of radium progress slowly. At the end of the first week the tissues become edematous and softer. The discharges may be temporarily more profuse. During the course of the third week, depending upon the amount of infiltration, the extrauterine lesion becomes less well defined, the pain and discharge gradually diminish, until within a period of about two months a condition may result in which little, if any, tumor tissue may be definitely felt. There may finally result only an atrophic uterus fixed in tissue which is indistinguishable from fibrous connective tissue. There are several cases of this kind in the service of the Memorial Hospital in which both the lesion and the health of the patients have remained favorable for nearly a year. There are other cases in which both the uterine and extrauterine growth diminishes in bulk and the general health improves, but a definite amount of tumor tissue remains. Subsequent treatment may further improve the lesion, but a small ulcerating surface of the cervical mucosa persists, which does not progress nor does it heal. The question of how long to continue the treatment of such a stationary lesion is a vexing problem. If treatment is continued too long a necrosis of the ulcer results which will never heal. Similar results follow the treatment of lesions in other parts of the body, especially about the mouth and lip in very elderly patients. Numerous observations of this kind have convinced us that its explanation is in the poor nutrition of the zone of tissue immediately surrounding the ulceration, which may be the result of the disease, the age of the patient, or overdosage at the first treatment. In one case syphilis appeared to be a factor. Occasionally, as in extremely advanced lesions, a rapid diminution in the bulk of the tumor follows a treatment, but it soon breaks down, leaving an extensive ulcerating crater. Overdosage may be the cause, but it is more likely to be the result of infected or necrotic tumor tissue.

*Borderland lesions*, or those in which the growth is largely limited to the uterine wall, offer, the writer believes, a desirable and justifiable field for the use of radium. Tumor in extrauterine tissues may be suspiciously present or definitely so to a moderate extent, but it is a fact of universal observation that the disease always extends farther than our senses of touch and sight indicate.

The writer has personally treated and observed two lesions at this stage, in both of which there is no gross evidence of the disease six and seven months after the treatments were begun. One lesion occurred in a cervix which was left by the writer in performing a supravaginal hysterectomy for a fibromyoma eight years ago. No

evidence of tumor tissue was present in the cervix two years ago, when the writer had occasion to make a vaginal examination because of pain in the sacral region. The tumor was discovered in the cervix by a surgeon in another city, whom the patient consulted because of pain and a bloody discharge. At the time of the writer's examination the entire cervix was involved and a slight thickening of the extracervical tissues could be appreciated. If radium had not been available, however, the growth would have been excised either with the knife or cautery. The other lesion occurred in a woman who had never been pregnant and gave no history of previous uterine disease. She had had a bloody vaginal discharge for three months. The growth involved the entire cervix up to but not including the vaginal insertion. There was definite induration in the left parametrium. There is at present no evidence of tumor tissue. Recently, however, the writer was consulted by the patient because of extreme nervousness, fits of depression and the vasomotor disturbances of the menopause. The writer has noted these symptoms in several of the hospital cases, which, of course, is the natural result of the radium effect upon the ovaries. It is especially important to explain these symptoms to both the patient and her friends, because in uterine cancer all symptoms are naturally ascribed to a probable recurrence of the disease.

Other observers have noted the transformation of inoperable lesions into apparently operable conditions, and in working out this problem there is no reason why the combined use of radium and surgery should not be tried in many of these borderland cases. The argument that the previous application of radium makes the surgical removal difficult, because of the density and fixity of the extrauterine tissues is not convincing. The findings on the operating table will depend, of course, upon the length of time since the radium was applied, but they will vary with the original extent of the disease, for which the radium was used. An extensively infiltrated parametrium will naturally result in more or less fibrous thickening. If there were only a slight involvement, there would remain a negligible amount of thickening. We are told by Dr. Kelly that by the combined use of radium and surgery recurrences within the first year have been notably diminished. It will be a fallacy, however, to assume that, because the extirpated uterus shows no histological evidence of the disease, the patient is cured. A case treated at the Memorial Hospital by radium was subsequently operated upon at another hospital and the uterus contained no histological evidence of tumor tissue. Within a few months, the



tissues in the region of the uterosacral ligaments showed thickening, and within another few weeks the diagnosis of a regional extension of the disease was confirmed by a rapid infiltration of the other pelvic tissues and the death of the patient. An additional advantage which an operation subsequent to radium treatment offers will be the discovery and removal of malignant lymph nodes, which radium can hardly be expected to favorably affect.

*Early lesions*, either of the cervix or body, are rarely seen so that the literature describing their anatomical characteristics is scanty. The writer, however, found in his study of precancerous changes in the uterus that several authors, notably Schottlaender-Kermauner, indicate the chief anatomical feature of certain forms of early uterine cancer is to spread superficially over wide areas before showing marked invasive tendencies. Clinical evidence of its superficial character are the undoubted instances in which the curet has cured the disease. There are on the other hand certain anatomical types of corpus carcinoma which, on account of their distribution, preclude the possibility of successful treatment by radium. One of these is the diffuse carcinoma arising on diffuse adenomyomatosis, in which the carcinoma arises over almost the whole of a moderately or much enlarged symmetrical uterine body. These tumors are usually highly malignant and early invade the parametrium, while yielding very slight local signs and these of an unusual character. A case of this type at the Memorial Hospital presented what appeared to be a plainly operable lesion. A rapidly growing extension of the disease was noted within a few weeks after the operation was performed. There is no experimental or clinical evidence that the application of radium to an early lesion of the uterine body, for example, prior to the performance of a hysterectomy will in the least jeopardize the result of the operation. It would appear to be a perfectly legitimate field for experiment. To argue for or against the capacity of radium to cure early uterine cancer at the present time would be as prejudicial to both the interests of radium and the educational propaganda of the importance of early diagnosis, as were the premature conclusions announced in the public press several months ago, based upon the reports of animal experimentation, that radium makes cancer grow.

*Cases after operation* constitute about two-thirds of the uterine material which is being observed and treated by radium in the present service of the Memorial Hospital, and of these, two-fifths applied within three months after operation having definite and even advanced extensions of the disease. It is reasonable to assure



that most of these lesions at the time operation was advised were in the borderland stage. If so, it seems to the writer that the use of radium prior to the operations would have more successfully arrested the progress of the disease.

In regard to the radium treatment of recurrences after operation, the evidence is conclusive that the removal of the uterus before treatment markedly diminishes the value of radium as a therapeutic agent. The healing of the wound in the vaginal vault leaves fibrous tissue which is always poorly nourished and unfavorably affected by radium. It also makes it difficult to appreciate early recurrences. The anatomy of the disease is so altered that the extent and exact location of the tumor tissue is difficult to define. The increased capacity of tumor cells to grow after being disturbed by the knife is a clinical observation that has been confirmed by laboratory experimentation. The chief advantage, however, which the presence of the uterus offers in radium therapy is that the uterine canal is so often approximately at the geometric center of the growth that it furnishes an ideal position for the radium emanation to exert its activity. The presence of the uterine wall itself, by filtering the superficial rays, permits of a dosage sufficient to effectively penetrate the surrounding extrauterine tumor tissues.

The extremely advanced recurrences often reproduce the anatomy of the terminal lesions of the primary cases. According to the histological type, there is the bulky adenocarcinomatous lesion having comparatively little crater formation, or the extensively ulcerating crater of the epitheliomatous type, in either of which it may be difficult, without the clinical history, to determine if the uterus has been removed. Regarding the radium treatment of such lesions, all of the factors that have been described in primary cases as contributing to premature discomfort, fistulæ, necrosis and ulceration, obtain with even greater force. Pain, however, which the writer has observed to be a more marked feature of secondary than primary lesions, may be occasionally relieved. A patient of the writer's presented six months ago a bulky recurrent lesion of the pelvis without ulceration, which had been causing intense pain. An application of radium was promptly followed by an appreciable diminution in the size of the tumor and relief from the pain for nearly five months. An increase in the size of the tumor and a return of the pain were not, however, favorably affected by a second treatment, and the patient recently died from anuria due to pressure of the tumor upon both ureters.

Less advanced recurrences respond favorably to radium treat-

ment in a fair proportion of cases, varying with the histological type and location. A moderate amount of ulceration and induration in the vaginal vault, or a moderate amount of tumor tissue without ulceration, situated in the position formerly occupied by the uterus, may definitely disappear and the health of the patient be restored for a varying period. Tumor tissue situated far out on the pelvis wall is more difficult to handle without injuring intervening tissue that is apparently normal.

*Prophylactic radium therapy* after operation has, of course, the same theoretical basis as has the use of the  $x$ -ray after operation for mammary cancer. In the case of the breast, however, it is technically easier to apply and the small beginnings of local and regional recurrence are easier to appreciate. For the satisfactory radium treatment of all the pelvic tissues an extremely large amount of radium emanation is required. It may prove that the combined use of the radium and  $x$ -ray will serve the purpose sufficiently well. Leaving a number of low-power emanation tubes wrapped in the gauze drainage of the vaginal wound at the time of operation may also prove an efficient method.

*Summary.*—The writer regards the use of radium in the treatment of uterine cancer as of definite service.

1. It is an agent peculiarly suitable for the treatment of uterine cancer, and is more effective for the arrest of the progress of the disease, as it is ordinarily presented to the clinician, than any other method that has hitherto been employed.

2. It is more effective in primary lesions than in recurrences.

3. It will occasionally relieve pain in the terminal stages of the disease.

4. It will relieve pain, stop hemorrhage and discharge and restore the general health in a large number of advanced lesions more effectively than any other agent.

5. It will convert borderland lesions into such as are plainly operable, and without surgery it will effect a disappearance of the gross evidences of the disease, and restore health in a large number of such lesions more effectively than surgery alone has hitherto been able to do.

## AN UNUSUAL ULCERATIVE PROCESS OF THE VULVA.

BY

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THE pathogenesis of the venereal ulcerations or soft chancre, or the syphilitic ulcers, the diphtheritic, the tubercular, the rare gonorrhoeic ulcerations and of the phagedenic or gangrenous ulcerations of the vulva, is well known. The presence of the specific microorganisms or the microscopic examination of tissue from the ulceration establishes the diagnosis in these cases, where the gross pathology and the clinical manifestations alone would not permit an exact recognition of the true nature of the condition.

Acute ulcerations of other etiology, such as herpes zoster, gangrenosus vulvæ, the balanitic erosions, the traumatic ulcers, the ulceration in diabetic women, the vulvovaginitis aphthosa, and the chronic *ulcus rodens* of Virchow, also the epithelioma, are in most instances recognized by the clinical manifestations and an exact history of the case or by the microscope.

I wish to report a case of an ulcer or ulcers in the vulva, which is of interest, as I could not find a similar one in the gynecological literature of the last eight years. On October 27 a married woman of twenty-three years, came to me with the following complaints. Three days previously she fell sick with chills and fever. Soon afterward she suddenly felt tenderness in the genital organs, severe pain on walking and burning micturition. The external parts became swollen and she had to go to bed. She had no appetite, felt nauseated and had fever for the three days. The previous history disclosed measles and scarlet fever as a small child, and rheumatism when sixteen. Otherwise she had always been well. The last sexual relation with her husband was three months ago. No partus, no miscarriage.

The examination showed a healthy looking, well nourished woman with normal physical status, no skin lesion, no enlarged glands. The left labium was very edematous and in separating the labia, a procedure which was very painful, three ulcers could be seen, one on the inner side of the labium the size of a quarter, a second back of it the size of a penny, and a third and very small one in the vestibulum of the vulva. All three ulcers had the same appearance. They were rather superficial, with sharp, clean edges,

at some places punched out, but at the vaginal side somewhat undermined, area the surrounding highly hyperemic, the base covered with a gray, moist membrane. Temperature 101.6° F., pulse 118, patient looked sick.

My first diagnosis was *ulcera mollia venerea* or *ulcera gangrenosa vulvæ*, as described by Vincent. The absence of the very acute foudroyant symptoms, of real gangrene of the edges or necrotic tissue, and of any fetor, justified me in ruling out a phagedenic condition and I thought of a Ducrey's infection of soft chancre.

The microscopic examination of smears from the ulceration showed in all a Gram-positive bacillus, mostly extracellular, as long as 4 microns, a few much longer, rather thick, the ends sharp cut, sometimes as many as 35 grouped parallel to each other. The bacilli looked very much like anthrax. This finding ruled out Ducrey's infection or venereal ulcer. Staining for tubercle bacillus, for gonococci, for spirilli, was negative. The next day the cultures for Loeffler's bacilli were negative. The urine was free from albumin and from sugar. There were no tender or enlarged lymph glands in the inguinal or any other region. The absence of any severe neuralgic pain and of vesicles ruled out herpes; the clinical picture, the sudden onset with very acute inflammation ruled out syphilis; the fever and chills before the appearance of the ulcers ruled out a traumatic ulcer with infection; the acuteness ruled out tuberculosis or epithelioma; absence of any fetor and necrosed tissue ruled out Vincent's gangrene, also the absence of the characteristic *Bac. fusiformis*.

I cauterized the ulcers with carbolic acid and alcohol, advised compresses with diluted liquor alumini subacetatis and eight days later the smaller ulcers were nearly healed, while the larger showed healthy granulations. Three weeks later nothing but a very superficial scar could be seen. I am sorry that I did not make other cultures than for Loeffler's bacilli. These cultures after twenty-five hours were negative, no growth.

In resuming we have to deal with an acute ulceration of the vulva, which was preceded and accompanied by chills and fever, burning and general malaise, acute ulcerations which had all the characteristics of *ulcer mollia* or soft chancre. The presence of a peculiar form of bacilli in all smears, the absence of all other microbes and the rather unusual clinical picture shows that we do not have to deal in this case with one of the known and well studied and recognized ulcerative processes of the vulva, but with a lesion not previously described.



REPORT OF FIBROMYXOMATOUS DEGENERATION OF  
THE CHORION WITH FOUR CONSECUTIVE  
PREGNANCIES IN THE SAME PATIENT.\*

BY

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(With exhibition of specimen.)

FIBROMYXOMATOUS degeneration of the chorion is so rare that little is found in the literature in reference to it. It occurs about once in 20,000 cases according to statistics gathered from the textbooks. Virchow and Hildebrandt, and later Fischer, regarded the condition as one of fibroid degeneration of the placental site with rapid proliferation, hardening and degeneration of the connective-tissue cells. The researches of Dienst and others have shown the close relationship between fibromyxomatous degeneration, fibroma and angioma of the placenta; that their origin is in the internal stroma of the chorionic villi and consist of enormous hypertrophy and hyperplasia of the terminal vessels. He suggests that they be termed *angiomatosum* or *fibrosum* in accordance with the predominance of either dilated vessels or connective tissue.

The lesion limited to the placental area and according to the literature, unless the placenta is sufficiently large and low to constitute a previa, pregnancy need not necessarily be interrupted. The pregnancy may go on to term or near term.

From my personal experience with the patient in question and two others that I have seen, the symptoms were manifest during the fifth and sixth months and I am quite sure that the process of hyperplasia, hypertrophy and degeneration began at the time of placental formation, certainly not later than during the early part of the fourth month, though a positive diagnosis could not be made at that time.

Another feature indicating the early changes during the developmental process, is the tendency to fetal malformations, as shown in this specimen and two of the other fetuses. This fetus had ascites, was partially macerated, and also presented a harelip, cleft palate, ankylosed shoulder and elbow-joints.

\* Read at a meeting of the Philadelphia Obstetrical Society, November 1, 1917.

The clinical picture is, too rapid enlargement of the uterus, with too great solidity on palpation and percussion, exaggeration of all the reflex signs of pregnancy, recurring and persistent nausea and vomiting, pain and edema from pressure, diminishing fetal heart sounds and fetal movements. Whether or not intrauterine fetal death occurs depends on the area of the placenta thrown out of function by the diverted circulation.

Three of these fetuses were stillborn, two of which were macerated and the fourth and last breathed feebly only three or four times. All were edematous and water-soaked. Two of the placenta were sufficiently low to constitute a placenta previa and two were partial placenta ablatia, normally located but the greater part prematurely separated. There is a tendency for adhesions to form between the unseparated portion of the placenta and the uterine wall and all four with this patient required manual separation and extraction. The placenta were all large, covering a considerable area of the uterus, were hard and gelatinous to the touch; wholly unlike the large edematous and water-soaked placenta, characteristic of active syphilis.

The weight of the placenta corresponds pretty closely with the weight of the fetus. The placenta corresponding with this fetus at the seventh month, weighed 4 pounds. This placenta at the time of delivery at six months, weighed  $2\frac{1}{2}$  pounds and the fetus 3 pounds.

According to the pathologists, this condition is not in any sense related to the malignant "chorioepithelioma" nor does it predispose to it, as does the "cystic degeneration," in 25 per cent. of the cases. There is excessive softening of the uterus, however, during the growth and a greater tendency to lacerations and rupture during delivery.

Involution of the uterus, though slow, is finally complete. The patient is none the worse for having had the disease and is just as susceptible to pregnancy as before.

*Case Report.*—The patient aged thirty-one years, American, weighing about 110 pounds. Occupation household duties. Her father died from cancer at the age of fifty years. Other relatives on the paternal side died from cancer and tuberculosis. Renal disease had been the predominant cause of death of the relatives on the maternal side.

The personal history gave the ordinary diseases of childhood and at the age of nineteen years a slight pulmonary hemorrhage, with recurring attacks for three years. Menstruation began at age thirteen, always normal, lasting three days, and of the 28-day

type. Married when twenty-two years old. The first child was born seven and a half years ago following a normal pregnancy. She is hardy and well. A second child was stillborn, as a result of breech delivery, six years ago, following a normal pregnancy and at full term. From the history obtained, both these placenta and membranes were normal. Five years ago her troubles began in spontaneous abortion following a brief period of profuse hemorrhage from partial premature separation of a normally situated placenta, which required detachment and extraction. Her pregnant period had been characterized by the chain of symptoms previously described. This occurred late in the fifth month and the fetus and placenta weighed practically the same—each a little over 2 pounds. She made a good recovery and became pregnant again in four months.

All of these four complications occurred within a period of four and a half years and a description of one, practically represents a description of all, except that the second reached the seventh month and the fetus had not only general anasarca but ascites also, requiring perforation of the abdominal wall before delivery could take place.

In this second instance a diagnosis of placenta previa had been made, which was correct. She had been bleeding for about six hours. The cervix was partially dilated and dilatable, the detached portion of the placenta easily palpated and immediate delivery was necessary. Dilation was completed manually, compressing at the same time the detached portion of the placenta. A foot presented and when grasped, with the degree of maceration present, promptly separated from the body.

With sufficient dilation to extract an ordinary seven months' fetus, this failed to move under fundal compression and moderate traction on the remaining leg, but instead the cervix gave way like so much blotting paper, the laceration extending well up to the body of the uterus. Intrauterine examination revealed a cystic tumor, which proved to be fatal ascites, which together with the large placenta were the causes of the obstruction. After perforation of the abdomen of the fetus, and the escape of approximately two quarts of fluid, the child was delivered without difficulty. A portion of this placenta, like the others, was adherent. Weight, 4 pounds.

Immediate trachelorrhaphy was necessary to control the hemorrhage. The patient made a good recovery and became pregnant again in a year.

A diagnosis was made on the supposition that it was fibromyxoma, because of the similarity of the symptoms with the two previous pregnancies. This time she reached the end of the fifth month and began to bleed because of the low insertion and large placenta. Coincident with the hemorrhage, good uterine contractions began and the delivery was effected without difficulty. Again there was a unilateral cervical laceration which was repaired at the intermediate period. Again she made a good recovery and became pregnant in eight months. This time she reached the sixth month,

although a stormy voyage from the beginning. All of the previous symptoms were in an exaggerated form; in bed most of the time with persistent nausea and vomiting. This last delivery occurred in June of the present year with partial premature separation of the placenta and the usual adhesions afterward. She ran a moderate sapremic temperature for one week, coincident with tardy involution of the uterus, which was not complete until the tenth week.

The patient had enough of this and I advised sterilization as the best preventive means. She agreed to this, but by reason of her religious faith, demurred until two weeks ago, when she came to me out of fear of recurrence of her trouble, in a highly nervous state, with intense backache and sharp pelvic pains, aggravated by walking or bending forward. Examination revealed a prolapsed cystic ovary, easily palpated through the posterior culdesac. I advised immediate operation and she readily consented with the promise that she would not be unsexed and no more of the pelvic viscera would be sacrificed than was absolutely necessary to prevent a repetition of her former conditions and to insure her health in the future.

October 22 (ten days ago and four months after the last attack) I removed the cystic ovary and resected both tubes. (The uterus was perfectly normal except small from hyperinvolution, not larger than a virgin uterus.)

The etiology of these abnormal pregnancies is in doubt. The only assignable cause is a history of chronic catarrhal endometritis after her breech delivery, which continued until her first pregnancy with fibromyxomatous degeneration. Otherwise she has been perfectly well since her marriage, except during the time of these abnormal pregnancies. She is not tubercular, nor is she syphilitic. Both she and her husband gave negative Wassermann reactions. The pathologists who examined the specimens found nothing to indicate that they were syphilitic in origin.

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## THE SURGICAL TREATMENT OF CANCER OF THE LARGE INTESTINE.\*

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COMPARATIVELY speaking, carcinoma of the large bowel is not a very malignant disease, because clinical experience and autopsy room study have definitely shown: First, that, locally, the process is one of slow development; second, that lymphatic involvement does not occur early; and, third, that metastases in other organs are

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as a rule late phenomena. Notwithstanding these facts, however, the surgical results until quite recent years have not been particularly encouraging: the operative mortality has always been high and recurrences frequent.

It is the purpose of this paper to point out the conditions that are responsible for the surgical failures and to call attention to the new methods that modern surgery has inaugurated in the effort to overcome them.

The large bowel presents certain difficult and complex problems. To begin with, many sections of this bowel are not completely surrounded with peritoneum and the uncovered segment, lacking the protective and agglutinative influence of this serous membrane, becomes the weak link in the process of healing and is a constant and serious menace to the suture line. Another unfavorable element, perhaps not so serious, but important enough to deserve mention, is the incompleteness of the longitudinal muscular coat, its extent being limited to a scant number of undeveloped muscle fibers arranged in a few narrow bands. The thinness of the wall becomes particularly noticeable during the state of distention (Hartwell).

The vascular supply of the large bowel is likewise not a very generous one, which is in marked contrast with that of the small intestine, in the mesentery of which we find numerous arches, or arcades, the function of which is to provide an abundant circulation and a very free anastomosis. This is not the case in the large bowel, where a single vessel often supplies a large area. As a result the slightest interference with the blood supply of a part may be followed by necrosis or marginal gangrene, leading, secondarily, to leakage and peritonitis.

The bowel contents, because of their highly infective character, constitute a most dangerous element, and the slightest soiling is liable to cause serious infections. Again, the more or less solid consistency of the fecal mass may cause necrosis by its mechanical pressure upon the suture line.

But what perplexes the surgeon most is the fact that any attempt at radical surgery on the large bowel involves long and formidable operative procedures which are dangerous in themselves, but are particularly so when we bear in mind that cancer of the large bowel in the vast majority of cases is a disease of advanced life with all the degenerative changes that go with it.

Is it any wonder, then, that the surgical results had heretofore been so distressingly disappointing? In fact, for many years this

condition had been regarded as so utterly hopeless that colostomy was practically the only form of surgical treatment resorted to, and that, too, only in the last stages of the disease, usually when the patients were already hopelessly obstructed.

In 1879 Gussenhauer and Martin, while operating on an obstructed case of carcinoma of the sigmoid, instead of resorting to the usual colostomy operation, brought the involved loop out of the abdomen, removed the tumor and sewed the open ends of the bowel in the wound. Contrary perhaps to expectations, the patient made a splendid recovery; in fact, she was known to be alive and in good health eighteen years after the operation.

This simple procedure marks the beginning of a new era in the surgery of the large bowel, as we shall presently see.

In 1883 Volkmann treated a case of sigmoid obstruction in practically the same manner, except that after bringing the sigmoid out of the abdomen, he first sewed the peritoneum around it and then removed the tumor. He did, however, more than that. Sometime afterward he applied a crushing clamp to the spur between the two limbs of the bowel, and when this cut through he sutured the free ends together and succeeded in reëstablishing the continuity of the intestinal tube.

The results in that case were truly startling and proved a real triumph for cancer surgery. Shortly afterward (1886) Heinecke wrote a very extensive thesis on this subject, describing the operation more in detail. He first freed the bowel from its mesentery and closed the peritoneum around the extruded loop. Then he removed the tumor and sewed the loops together side by side. Later on he applied an intestinal clamp to the spur, and eventually restored the intestinal canal. Bloch, of Copenhagen (1891), not only brought out the loop of bowel, as the others before him had done, but he went a step further. He left the tumor undisturbed for a few days, or until he felt that sufficient adhesions had formed around the bowel to shut off the peritoneal cavity. Then he removed the tumor and drained the bowel for some time, and after application of a clamp to the spur, he finally restored the continuity of the bowel by a plastic operation.

At about this time a number of other surgeons, among whom may be mentioned Hochenegger, Korte, Edmonds and Hale, adopted this method and practised it with singular success. Paul, of Liverpool, in a review of his personal work (1912) stated that he had been doing this operation for twenty-two years (since 1891), not having known anything about Heinecke's thesis. His technic was

essentially the same, except that he tied glass tubes in the open ends of the bowel and drained both loops.

The above procedures have been purposely traced in their chronological sequence with the view of emphasizing the gradual, though tardy, development of the principles upon which the modern treatment of cancer of the large bowel is based, and which may be expressed in the following propositions:

*First.*—That prompt relief of the obstruction is the most essential feature in the treatment of growths of the large bowel, deferring all other surgical efforts until some future and more favorable date.

*Second.*—That any radical surgery on the large bowel, to be successful, should be carried out outside the abdomen in order to minimize to the utmost the danger of peritoneal soiling.

*Third.*—That the great danger to the patient of being subjected to prolonged and extensive operations is obviated by carrying out these procedures in a fractional manner which, when done at intervals and spread out over a considerable period of time, avoids shock to the patient, conserves his strength and offers better opportunities for a more thorough eradication of the disease.

Fully recognizing the wisdom of the above principles, v. Mikulicz took up Bloch's ideas and made use of them in his clinic with most gratifying results. But, unlike his predecessors, he did not limit this method to tumors of the sigmoid alone, but applied it freely to growths in other parts of the large bowel. Moreover, he found this method just as applicable and just as advantageous in cases without any symptoms of obstruction. He presented a very extensive report of his experience before the Congress of German Surgeons in 1902, and this method has since been known as the Mikulicz operation. In 1904 Charles H. Mayo became interested in this operation and applied it in a large number of cases at the Mayo Clinic. William J. Mayo, in commenting upon the merits of this operation, says: "The Mikulicz operation has done more to extend the operability and reduce the mortality in cancer of the large bowel than any other factor."

The Mikulicz operation is truly a life-saving procedure and is now universally practised, particularly during the stage of obstruction. Unfortunately, this operation is not applicable in every case of cancer and, besides, there are also conditions when other operations can be done with certain advantages, as will be brought out later on.

The character of the tumor, the location of the tumor and its relation to and the involvement of the adjacent organs have con-

siderable bearing upon the operability, as well as upon the particular operative procedure to be undertaken.

*The Character of the Tumor.*—Three distinct types of tumor are met with in cancer of the large bowel:

1. The large, soft, fungating, or "encephaloid" tumor.
2. The large, hard, infiltrating, or "colloid" tumor.
3. The small, hard, annular, or "scirrhus" tumor.

The soft spongy tumor is distinguished from the colloid by the fact that there is no infiltration of the bowel wall, the fungating growth being inside the lumen of the bowel. Associated with this growth are usually found large soft glands in the mesentery. It is interesting to note that these glands, though large and juicy, are, as a rule, not malignant, but are septic or inflammatory in character.

The spongy tumor is the least malignant of the three. All up-growing tumors, as a matter of fact, anywhere in the body are essentially less malignant than the down-growing ulcerating or shrinking kind.

The most common sites of the spongy cancer are at the two extremes of the large bowel—the rectum and the cecum, though occasionally they are found in other parts of the large bowel.

The hard colloid, or infiltrating, cancer is a solid and massive tumor, its main characteristic being that it involves the entire wall of the bowel, usually having a hard-edged ulcer on the inside. This growth, especially in the presence of hard, glistening glands, or when there is involvement of the adjacent peritoneum, does not offer a favorable prognosis. Since the prospects of cure in colloid cancer are never too good, some claiming as high as 100 per cent. of recurrences, the rule is that unless wide and thorough extirpation appears unquestionably favorable, great risk to life by extensive operations should never be attempted.

The scirrhus tumor is about midway in malignancy between the other two. It is unmistakable in its appearance as it produces a hard, ring-like structure. This type of tumor is responsible for obstructive symptoms early in its development. It is probably the most frequent tumor met with in the left-sided cancers.

*The Location of the Tumor and its Relation to Other Organs.*—Tumors situated to the right of the median line are comparatively easy of approach, and radical treatment can usually be carried out with perfect safety. The fact, however, that the contents of this part of the bowel are still more or less fluid is rather a disadvantage from a diagnostic point of view, since symptoms of obstruction or any signs suggestive of interference with the fecal current do not



occur early and the growth may go on to considerable development with extensive lymphatic involvement and even metastatic deposits in other organs before malignancy is even suspected. In many cases this goes on to perforation and abscess formation and still without any symptoms of obstruction, the patients simply presenting the picture of an obscure right-sided peritonitis, and the true condition is discovered only by an exploratory operation.

Tumors situated to the left of the median line often present great technical difficulties. Their close proximity to so many important organs requires particular care and attention. Special consideration will be given these tumors when discussing the treatment in their respective regions.

The operative procedures that are practised in the radical removal of cancers of the large bowel will be grouped under three headings:

*The one-stage operations, the two-stage operations, and the three-stage operations.* These are all radical operations in the sense that they all aim at a complete extirpation of the disease by removing the tumor and the involved adjacent structures, but with these differences: In the one-stage operations, conditions permitting, the entire operation is completed at one sitting. In the two-stage operations the most important or the more urgent part of the procedure is carried out at the primary operative attack while the subsequent steps are deferred to some future date when conditions are more favorable. The three-stage operation is the Mikulicz operation. The principles upon which it is based, have been sufficiently dwelt upon and need no further comment except to emphasize the fact that it is universally recognized not only as the safest procedure, but as one that holds out the best prospects for a successful cure. These stage-operations have their particular indications, as will presently develop.

Because cancer of the large bowel is so frequently associated with symptoms of obstruction, the consideration of this phase of the disease will be taken up first.

We cannot be reminded too frequently that during the stage of obstruction any attempt at resection and immediate anastomosis is fraught with danger, often leading to disaster. The obstructed, toxic patient who has been exhausted by pain, nausea and vomiting, and who suffers from lack of nourishment and loss of sleep, is not a fit subject for radical surgery. We must also bear in mind the great mechanical difficulties that obtain under these conditions. The tympanites and distention cause tremendous pressure against the diaphragm and lead to cardiac and respiratory embarrassment.

The handling and exposure of the distended loops are frequently responsible for a great deal of shock. In addition, the bowel may be so dangerously thinned out that the least touch may cause its rupture at any moment, or the intestinal wall may be so congested, edematous and friable that the sutures cut through, or tear through, permitting the escape of the septic fluid.

Intestinal obstruction under these conditions should be looked upon as a distinct disease and should be treated as such. The bowel should be emptied by the simplest possible procedure. In desperate cases a colostomy, or cecostomy, or ileostomy under local anesthesia should be the limit of our efforts. But if the general condition of the patient is so bad that even such simple procedures cannot be attempted, then surgery is absolutely contraindicated and resort should be had to lavage, hypodermoclysis, enemata, etc., in the hope that by tiding the patient over this critical period his condition may improve to the extent that he can be subjected later to some such simple procedure as has been indicated above.

If the general condition of the patient, however, is satisfactory, then the abdomen should be opened promptly and the first stage of the Mikulicz, or Paul, operation carried out. When the Milkuicz operation is not applicable in any particular case, then some form of cecostomy or ileostomy can be done simply as a temporary measure of relief.

Now, given a case of cancer of the large bowel without symptoms of obstruction, or when dealing with a patient whose acute symptoms have been relieved, and the surgeon can choose the time for operation, the question arises: What is a safe and proper procedure in that particular instance?

Beginning on the right side, tumors of the cecum, the ascending colon or the hepatic flexure offer comparatively little difficulty. Operative procedures in this region have been fairly well standardized and good results may confidently be looked for, provided that the tumor is removable, that there is no evidence of metastasis and that the patient's general condition warrants radical surgery.

*The Treatment of Cancer of the Cecum, the Ascending Colon and the Hepatic Flexure.*—The radical operation most frequently practised in this region is the Friedrich operation. This is a one-stage operation. It is a comparatively safe procedure and can be readily carried out without much shock to the patient. It is indicated only in cases without obstruction.

The abdomen is opened and thoroughly explored. The liver particularly should be examined for metastasis. This holds true

for all cases of cancer. Now, if conditions are favorable the first essential step in the technic of all radical operations is the mobilization of the bowel; that is, the process of releasing the bowel from its natural attachments.

*The Mobilization of the Bowel.*—Advantage is taken of the fact that the outer leaf of the peritoneal attachment of the bowel is quite loose and contains no structures of importance, as the vascular supply is carried in the inner, or mesial, leaf. The outer blade of the peritoneum is picked up with forceps, nicked at some point and the opening is carefully enlarged up and down with a Mayo scissors, or some other suitable instrument, and then by gentle gauze dissection the bowel is thoroughly freed to the desired extent. In cases of tumor of the cecum, the ascending colon or the hepatic flexure, mobilization begins in the region of the cecum and extends upward, including the ascending colon, and usually the hepatic flexure to the transverse colon, depending, of course, upon the extent of the lesion. Those who have not had occasion to practise this method will be pleasantly surprised to find how easy it then becomes to bring the entire involved bowel out of the abdomen, even though it is still attached by the inner peritoneal blade. The bowel, with its mesentery, can now be held up against the light and the details of its structures studied, such as the vascular supply, lymphatic involvement, etc.

The ileocecal junction is now exposed, the terminal portion of the mesentery is freed, the lower end of the ileum (lower 5 or 6 inches) is double clamped and divided, the transverse colon is likewise double clamped and divided at some point (depending upon the situation of the tumor), and the entire freed bowel is then easily lifted out of the abdomen en bloc.

The ileum is now anastomosed with the transverse colon (ileo-transversostomy). This is accomplished by some form of anastomosis, either the side-to-side or end-to-side method. The Mayos describe a very interesting end-to-side anastomosis by means of the Murphy button. They bring the closed end of the transverse colon into the wound, which can be opened in case of gas tension.

In any operation involving the removal of the cecum the lower 5 or 6 inches of the ileum should also be removed because in tying off the ileocecal artery the nutrition of the lower end of the ileum is frequently compromised.

*The Treatment of Cancer of the Transverse Colon.*—This part having a complete peritoneal covering and a long and free mesentery, resection and immediate anastomosis is rendered fairly safe, provided

there be no obstruction or any other complications, such as perforations into the stomach, etc.

The one-stage operation is readily applicable here, either by an end-to-end or a side-to-side anastomosis. The suture line can be reinforced with omentum. The arch of the middle colic artery should be carefully studied and ligation cautiously performed at the lateral limits of the involved area; otherwise, gangrene of the bowel may ensue. In case of doubt as to the safety of the anastomosis, the sutured area should be brought out into the wound and provision made for its opening, if necessary.

*The Treatment of Tumors of the Splenic Flexure.*—As we cross the median line to the left, we begin to meet with more serious difficulties. The splenic flexure is placed deeply in the abdomen, is not easy of approach, and tumors are not readily diagnosed, even with the abdomen open. It is held in position by the short phrenocolic ligament, which requires division before the bowel can be mobilized. There may be adhesions to the adjacent organs, as the stomach, spleen or kidney. Ulceration into the stomach may be responsible for fecal vomiting.

If the tumor is localized before operation, the abdomen should be opened on the left side; otherwise, an additional transverse or subcostal incision may be required. The peritoneum is divided on the outer side of the descending colon and the incision carried upward to the splenic flexure. This is very important. Any attempt to attack the splenic flexure directly often leads to sad complications. Here also gauze dissection and gentleness should be practised until the costocolic ligament is reached, which is divided between clamps and ligated. The outer part of the gastrocolic ligament is also freed and divided, and the entire mass lifted out of the abdomen.

At this point, the surgeon has to stop and decide upon the choice of operation. It is possible to do a one-stage operation by uniting the transverse colon with the sigmoid flexure (sigmoidotransversostomy) with the immediate removal of the intervening portion. But, with the bowel already mobilized, it is much easier, and certainly safer, to simply complete the first stage of the Mikulicz operation. Of course, here, as elsewhere in the large bowel, in the presence of obstruction, an immediate anastomosis should not even be considered.

Adhesions to and perforations into an adjoining organ, as the stomach or small intestine, do not necessarily make the case inoperable; and, provided the patient's general condition permit it,



radical surgery can still be carried out, the perforation may be closed and the suture line reinforced by a patch of omentum.

*Tumors of the Descending Colon.*—The same principles that are applied in the treatment of tumors of the splenic flexure are indicated in tumors of the descending colon. Under favorable conditions, the one-stage sigmoidotransversostomy can be done, but the Mikulicz operation is the much safer procedure and is the operation of choice.

*The Treatment of Pelvic Tumors.*—The treatment of cancer of the pelvic colon (sigmoid) and of the rectum constitutes one of the gravest problems in surgery. Placed deeply in the pelvis, as these tumors are, and completely surrounded by other organs, they are not likely to be recognized early except perhaps when they are found accidentally at the time the abdomen is opened for some other condition, as happens occasionally in gynecological operations. Most frequently they manifest their presence by a sharp attack of intestinal obstruction.

The sigmoid having a long and free mesentery, its central portion the most freely movable one, in the absence of symptoms of obstruction, lends itself readily to a primary resection and anastomosis. When, however, the tumor is situated in the first part of the sigmoid (upper third) and encroaches upon the descending colon, and because the latter is not completely surrounded with peritoneum, an immediate anastomosis cannot be attempted, and the Mikulicz operation therefore is the proper procedure. In some cases a sigmoidotransversostomy has been done, but this is too extensive an operation for a rather low tumor. Tumors situated in the lower third of the sigmoid have always been the *bête noire* of the intestinal surgeon. Because they are not sharply limited, and encroaching, as they do so frequently, upon the upper rectum, they are usually spoken of as "rectosigmoid tumors." The great difficulty in these cases is that the lower loop; that is, the bowel beyond the tumor, is too short for mobilization; also, all procedures must be carried out in the depth of the pelvis under the most trying conditions. The Mayos have succeeded in mobilizing even the lower rectum and then by stripping back the parietal peritoneum and depressing it, they have been able to exteriorize the bowel on the Mikulicz principle. This, however, is not always feasible and when it is not, it becomes necessary to resort to some other procedures.

Many operations have been described for the treatment of these tumors, but the two most accepted operations that will be discussed

here are the Balfour tube resection method and the Coffey modification of the Mayo two-stage operation.

*The Balfour Operation.*—This is a one-stage operation. Its scope is a rather limited one since it is applicable under certain conditions only. The rectosigmoid tumor must be so situated that after division of the bowel, there is left at least one inch of peritoneal-covered rectum within the culdesac, and the relation between the loops must be such as to permit the ready coaptation of the divided ends without tension. If conditions conform to these requirements, then an immediate end-to-end anastomosis can be done by the tube method with the preservation of the anal outlet.

The abdomen is opened and explored, as usual. The bowel is freed from its attachments and the peritoneum is carefully protected with gauze pads. The bowel is then sectioned and the tumor removed. A large rubber tube is then passed into the open end of the upper (proximal) loop and is attached to it by a purse-string suture. The other end of the tube is passed down into the lower (distal) loop from above and out of the anus. The bowel ends are then made to approximate and are sutured together. At this point, traction is made by an assistant on the external end of the tube. This causes an enfolding of the suture-line into the rectum. A second row of sutures is then taken and as traction is again made upon the tube by the assistant, there is still more inversion and, finally, a third row of sutures all around completes the operation. The anal sphincter is temporarily relaxed by dividing it with the cautery. The tube is stitched to the skin and left in about a week. The principle of this operation is that all intestinal contents are passed through the tube and do not come in direct contact with the suture line. Furthermore, if there is necrosis of the suture line and some leakage, it will likewise drain into the bowel, and not into the peritoneal cavity.

*The Coffey Modification of the Mayo Operation.*—This is the tragic operation of surgery. It condemns the patient to a permanent abdominal anus. It is an operation that the surgeon is most reluctant to perform and yet it is a life-saving procedure. This is a two-stage operation. The abdomen is opened in the midline and thoroughly explored. If a radical operation is indicated, the involved bowel is freed on either side down to the culdesac. The bowel is double clamped above and below the tumor and divided with the cautery. The upper loop is closed and inverted with a double row of sutures, painted with tincture of iodine and wrapped up in gauze and laid aside. The lower loop is also closed with a double row of

sutures and painted with tincture of iodine. A rectal tube is passed through the anus into the rectum to the upper end of the bowel and a strong double thread passed through the bowel and tube and tied. The walls of the bowel are then grasped with forceps on either side and traction is made by an assistant on the rectal tube, causing an inversion of the bowel down to the forceps. This is repeated several times until the upper inverted end of the bowel projects through the anus. The peritoneal funnel is then closed with a few sutures. The upper loop is then brought out through a small left rectus incision, as a permanent colostomy, and the abdomen is closed.

The removal of the lower end is done at some future date usually about ten to twenty days later. This consists in making a median perineosacral incision, removing the coccyx and the last sacral piece. The bowel is exposed and removed completely, including the surrounding connective tissue and fat, and also the anal sphincter. There is very little shock and the peritoneum is not opened.

A combined abdominoperineal one-stage operation (Quenu) is a procedure of great risk and is but rarely done. It is particularly dangerous in the obese.

The technic of colostomy is of little consequence as regards the ultimate functional results, except that as a general principle it should be placed above the pudendal hair line, because when the latter is soiled there is a tendency to uncleanness and fecal odor.

Mixer places the colostomy in the midline, just beneath the umbilicus. This furnishes direct access to the lower sigmoid and rectum and facilitates cleansing.

Littlewood places the colostomy in the waist line, just above the anterior-superior spine of the ilium. He thus obliterates the peritoneal space to the left of the colostomy and prevents any possible adhesions or incarceration of the small intestine in this space. Obstructions of this nature have been reported.

The Kraske operation with the establishment of a sacral anus, has not been practised of late years, as experience has shown that an anterior abdominal anus is far more desirable from a hygienic point of view than a sacral anus without a sphincter.

Attempts at saving the anal function by various plastic operations have been a common cause of technical failures, resulting in some cases in failures of cure and in others sepsis and death.

Gerster has recently called attention to Kuttner's mobilization (*vorlagerung*) operation. Kuttner has reported a series of cases in which he treated upper rectal cancers by what might be termed a sacral Mikulicz method. He makes a posterior median sacral



incision, frees the bowel, brings out the involved loop and closes the peritoneum around it. He then sews the two loops together, side by side, and packs gauze around the entire mass. A day or two later he removes the tumor and completes the anastomosis by a plastic operation.

In any case where an anastomosis has been done and doubt exists as to the safety of the suture line, the sutured area may be stitched to the peritoneum, or it may be brought out entirely into the wound. If the loop of bowel is too short for this maneuver it can be suspended on a roll of rubber tissue so that adhesions will form around it, and then the suture line becomes extraperitoneal (Mayo).

Bloodgood, in selected cases, resects the growth, closes both ends and performs a side-to-side anastomosis. He then brings both ends of the bowel into the wound so that in case of gas tension, the ends can be opened and the tension relieved.

The Mayos at times unite the proximal end to the distal end, in an end-to-side fashion, and the distal end is brought out into the incision just through the muscle. This end, which is invaginated by a purse-string suture, may be opened when there is great gas tension. A rectal tube may be inserted for additional safety. This may be passed from below even into the splenic flexure.

The ureters should always be identified and isolated. This is particularly important in left-sided tumors. Here the ureter is occasionally involved in the growth and require detachment. The Mayos have resected portions of the ureter and when they could not anastomose them, or when they could not implant the proximal end into the bladder, they tied both ends of the ureter with catgut, producing a permanent obstruction to the kidney which eventually causes its atrophy. In no case was it necessary to remove the kidney later. In one case in which the kidney was closely adherent to an otherwise operable growth, they removed the kidney with the growth.

In low sigmoid tumors the bladder may be involved. As a rule, however, only the peritoneal and muscular coats are affected, while the mucous membrane escapes. The bladder can be readily resected and closed with a few chromic sutures and protected further by a few additional peritoneal sutures. The bladder is drained for a few days by catheter and union is certain.

Involvement of the tubes and ovaries is, according to Mayo, not of great consequence. The ovaries are the most frequent site of cancer-grafting of any organ in the abdominal cavity, possibly because ovulation leaves an exposed surface for cell-grafting. The



ovaries should always be removed upon the slightest suspicion of involvement. If the uterus and tubes are also involved, a rapid hysterectomy may be done by cutting the cervix directly across, after separating the bladder, grasping the uterine vessels and dissecting the broad ligament from below upward on each side. The uterus, tubes and ovaries are freed as one mass, but are still attached to the sigmoid. This leaves the uterus to block the weak point in the bowel and prevents a possible rupture of the gut (Mayo).

207 HART STREET.

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## TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

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*Meeting of November 13, 1917.*

*The President, DR. HIRAM N. VINEBERG, in the Chair.*

DR. GEO. W. KOSMAK presented a report on

### TRAUMATIC RUPTURE OF THE UTERUS WITH POSTMORTEM ABDOMINAL SECTION AND DELIVERY OF A LIVE CHILD.

Traumatic rupture of the pregnant uterus due to external causes is an extremely rare occurrence and the unusual features of the case herewith presented prompts the following report.

The patient, Mrs. M. R. (A. N. 59983) was admitted to the second division of the Lying-In Hospital on the afternoon of July 3, 1917. She was about eight months' pregnant and complained of dizziness, headache, and intense epigastric pain. She was a para-iii with two living children and as far as could be learned the pregnancy had been uneventful up to the time of admission. The patient seemed rational and was put to bed for observation and eliminative treatment. During the night she became very restless and was restrained with difficulty. No convulsions occurred. On the following morning her mental condition appeared clear and she seemed quite rational, although refusing treatment. The urine showed only a slight trace of albumen and the diagnosis of threatened eclampsia was modified, the patient apparently suffering from a psychosis. When I saw the woman about 3 o'clock in the afternoon of July 4th she answered questions rationally and said she felt better. There was nothing suspicious in her demeanor. About half an hour later, just after a blood pressure reading had been taken by a house doctor, and with the nurse and doctor still in the isolation room but with their backs turned on the patient, she suddenly climbed on the window-sill and the window being open from below, she dropped out through the same before the doctor or nurse could reach her. The woman was dashed to the pavement, a distance of at least 75 feet, striking on her head and was killed instantly. She was immediately brought

back into the hospital but some delay occurred in returning her upstairs and it was fully ten minutes, or perhaps more, after the accident before the postmortem Cesarean section could be done. An incision was made in the median line below the umbilicus and on opening the abdominal cavity it was found filled with blood. The uterus was tightly contracted in the lower portion and had ruptured through the anterior wall near the fundus, the child being free among the coils of intestine with the placenta still in the uterus. The child was resuscitated after a considerable amount of blood and mucus had run out of the mouth and nose. It was fully developed and apparently of about eight and one-half months.

The woman had sustained a crushing fracture of the vault of the skull. She was of small stature and the uterus had not been unduly distended with liquor amnii. The baby continued to breathe without difficulty but made very little effort to cry. During the night spasmodic movements of the right arm were noticed and the characteristic sharp cry due to cortical irritation developed. An examination on the morning of July 5th showed the left eye open, the right eye closed, pulse irregular, and a spastic paralysis of the right arm. The right leg seemed less effected. A sharp piercing cry was elicited as soon as the baby was disturbed. The skin and mucous membranes were pale. The anterior fontanelle was decidedly elevated. A diagnosis of probable subdural hemorrhage was made, due to indirect trauma, no evidence of a fracture being found and there was no discharge from the mouth and nose of fresh blood. The condition of the child grew progressively worse and it died on the morning of July 6th.

We have here a case of traumatic rupture of the uterus due to a fall from a great height. Subsequent examination failed to show any fracture of the pelvis.

Another feature of interest concerns the child, as a period of over ten minutes had elapsed before this could be extracted from the abdominal cavity. Just why a cerebral hemorrhage in the baby should have occurred is a matter for conjecture, as no direct trauma to the child had resulted. An autopsy on the baby was not permitted so that we do not know whether hemorrhages occurred elsewhere that might have been ascribed to the asphyxia. As far as I am able to determine this is the only case of its kind in the records of the Lying-In Hospital where a living child was secured postmortem after traumatic rupture of the uterus.

DR. RALPH H. POMEROY presented

A SPECIMAN OF FIBROMYOMATA SIMULATING A FOUR MONTHS' PREGNANCY.

The specimen was presented in approximately unchanged condition after two weeks in cold storage. It showed the general consistency and location symmetry of the tumor, but not the definite fluctuation noted *in vivo*. I quote the description of the gross specimen by Dr. E. Schwarz, Pathologist at Brooklyn Hospital:—'Corpus

uteri is changed into a globular body of 12 cm. diameter. The enlargement is due to an intramural (posterior wall) myoma of approximately 10 cm. diameter. The latter is extremely edematous and contains large lymphangiectatic spaces.'

Mrs. W. J. W., aged thirty-one had had one pregnancy, terminating three weeks prematurely, three years ago. The child weighed 7 lbs. and lived. Lactation was competent for nearly one year though menstruation recurred regularly from the fifth month postpartum. Chief complaints at present have progressively increased during the past five months, *i.e.*, pelvic discomfort; leukorrhea; backache; headache; difficulty in urinating; constipation; protrusion of vagina; pain and clots with menstruations (last occurrence, Sept. 9th, 1917, on time, lasting four days). Examination showed a symmetrical cystic mass filling the pelvis and pressing the cervix against the symphysis. Diagnosis recorded: 'If the history is truthful this is a myoma of uterus.' The patient consented to a radical operation only on condition that no error should be made in regard to possible pregnancy, her previous medical advice having been to the effect that she was pregnant with threat of miscarriage.

September 28. Under anesthesia, I reduced to normal relations the incarcerated, retroverted uterus, without hemorrhage, introduced a large pessary, and sent the patient home with instructions to return for radical operation if she menstruated again on time. It is of interest to note that under the anesthetic before restoration from retroversion, a distinct Hegar's sign was observed.

On October 10th, the patient reported a profuse menorrhagia. Two weeks later I executed a sub-total abdominal hysterectomy. As a matter of curiosity a sound was first introduced through the cervix determining to our satisfaction the presence of a tumor in the posterior wall of the uterus. The recovery was uneventful.

#### DISCUSSION.

DR. EDWIN B. CRAGIN.—I might call attention to the fact that almost all of us, I think, after opening the abdomen and finding a symmetrical uterus with a submucous fibroid in it, have been puzzled to know whether after we opened the abdomen, we had a pregnant uterus there or not. I can look back on several occasions when I had to stop and ask an assistant to go into the history very carefully and see if the woman had skipped any periods. It is a common experience that a submucous fibromyoma will give rise to a soft uterus, one which is congested and looks a good deal like a pregnant uterus, and I think all of us have sooner or later run into the dilemma whether to go ahead or close the abdomen.

If the tumor was soft, as the doctor reports, it seems to me he has followed the best procedure. With a fibroid of that size, that has begun to degenerate, I would rather not do a myomectomy through the abdomen. I believe his supravaginal amputation was the best procedure under the circumstances.



DR. HERMANN J. BOLDT.—A great many years ago I had the opportunity of operating upon a woman upon whom the diagnosis of a soft myoma was made. Upon opening the abdomen (it was also a symmetrical uterus enlarged to probably about the sixth month of pregnancy), the impression was made not only upon me, but upon every one who was present in the operating room, that we had a pregnant uterus to deal with, and I closed the abdomen. I think about four or five weeks subsequently I removed the tumor. That case is particularly impressed upon my mind because the patient endeavored to bring a suit against me for malpractice.

DR. CHARLES G. CHILD, JR.—Regarding the differential diagnosis in these cases where the abdomen is opened and the uterus symmetrically enlarged, a fibroid uterus may be the same consistency to the hand as a pregnant uterus, and when cystic may give the appearance of containing fluid in the uterine cavity, still the anatomical and pathological appearances are distinctly different. With the pregnant uterus there is always the accompanying hypertrophy of the round ligaments with is quite characteristic and the ligaments are attached at the fundus, that is, the highest point of the uterus, whereas in the fibromyoma the round ligaments are smaller and always inserted lower down, below the level of the upper portion of the fundus as in the pregnant uterus. This constitutes a certain means of making a differential diagnosis when the abdomen is open.

DR. REGINALD M. RAWLS presented

#### A PRELIMINARY REPORT OF AN OPERATION FOR CYSTOCELE.\*

##### DISCUSSION.

DR. LEROY BROWN.—I wish to congratulate Dr. Rawls on the result of his work as it is an admirable operation. I believe that it fulfills what we both having been trying to accomplish during the last year as a result of our joint study of various cystocele operations and the condition of the interior of the base of the bladder. Our experience in cystoscopying these cases after various forms of cystocele operations, both where the bladder was suspended after the Goffe operation and in those in which the fascia or the pillars were brought together under the bladder, showed that in almost every instance the interior of the base of the bladder was corrugated and thrown into many folds, sometimes longitudinal, sometimes horizontal. It was a wonder to us that more bladder disturbance did not result and we were also impressed with its tolerance in not actively resenting the wide departure from the normal plane of the trigone.

We presented a preliminary report of this work before the American Gynecological Society at its last meeting. Most of the work done by Dr. Rawls was done in the summer during my absence and I have had no opportunity to examine the bladders, but he

\* For original article see page 359.

informs me they are perfectly normal and there are no corrugations. The plan of separating the fascia from the overlying vaginal mucosa and the underlying bladder musculature, together with a free separation of the bladder from the uterus up to the peritoneal fold will give the bladder ample room to spread out on both sides. If to this we add the doubling of the fascial strength below the freed bladder, as suggested by DR. Rawls, I believe we have an operation that is an ideal procedure.

DR. GEORGE G. WARD, JR.—I have brought a few slides with me which bear on the subject of cystocele. This subject has always been one of great interest to me, and as I see it, there are two essential principles that should be employed for the successful cure of the condition. First, the wide separation of the bladder from the vagina and the uterus and its elevation to a higher position on the anterior surface of the uterus. Second, the uniting of the fascial pillars running from the cervix to the pubes underneath the bladder to give it fascial support.

The credit for the first principle belongs to Haydra in 1889, and Saenger in 1892, as they then brought out the importance of liberating the bladder freely from the vagina and its attachments to the uterus and its elevation to a higher position in the pelvis.

The second principle has been advocated by Martin, Frank, and others.

In my experience I have frequently found these fascial pillars very poorly developed, and that their suturing alone is not sufficient to insure a cure of the hernia. They seem in some cases to be extremely delicate structures, and I have always felt that they were not of sufficient strength to give the requisite support in a case where there was a large cystocele. The first principle is of prime importance, and in extensive prolapse the employment of one or more sutures to attach the base of the bladder to the anterior surface of the uterus, as advocated by Goffe, is of value to insure its adhesion high up.

In a large cystocele of long standing, the bladder floor is stretched. There is an actual increase in the length of the base of the bladder and of the anterior vaginal wall, and I believe it is necessary to take care of this excess length of the vagina in these cases. Therefore, in addition to the employment of the two principles just mentioned, a third one is of advantage, that is, to angulate the vaginal wall by suturing it to the uterus as high up as the neighborhood of the internal os, somewhat as in a vaginal fixation. This causes a traction on the loosened bladder base so that the bladder will slide upward on the face of the uterus, revolving around its transverse axis to the position we desire.

DR. HERMANN GRAD.—I would like to testify to the value of the overlapping of the fascia as described by Dr. Rawls. I just did this operation in a case of complete procidentia of about seven years' standing and was surprised to find how much of the fascia I was able to lap over. A case that I operated on about three weeks ago, where the same operation was followed, gave a most

excellent post-operative result. I do not know of any anterior wall operation that gives as nice a post-operative result as does this lapping of the fascia. The lapping of the fascia of the anterior wall of the vagina is a distinct feature with Dr. Rawls and, I might say, something that is unique, particularly his scheme of placing of the sutures.

DR. RAWLS.—My experience differs from that of Dr. Ward in that formerly, in my cystocele repair it was difficult to prevent an antero-posterior shortening of the vaginal wall. Further I do not quite understand what he refers to by attaching the raw surface of the bladder higher up on the uterus. If we carefully dissect down to the bladder and then by blunt dissection push the bladder away from its pillars, we will get a distinct line of cleavage with no appreciable bleeding unless by accident we injure the vaginal plexus of veins.

In a recent case, of a complete cystocele of long standing uncomplicated by uterine prolapse, the anterior wall was well out of the introitus and was apparently very thin, yet I was able to dissect out fairly good pillars and to lap them successfully.

In another case with complete prolapse of some duration I was also able to repair the fascial sling and on opening the abdomen to shorten the round ligaments, I was surprised to find the fundus held firmly forward. Of course in this case I had also done a rather extensive rectocele operation.

Furthermore I am convinced, that while the bladder is held up by ligaments, their action is "sling like" and that the support is from below; this is demonstrated by the fact that when the bladder is full or dilated it ascends and thus moves in the plane of least resistance.

DR. ASA B. DAVIS read a paper entitled

#### PYELITIS COMPLICATING PREGNANCY.\*

##### DISCUSSION.

DR. EDWIN B. CRAGIN. In the first place, I think we ought to look at the typical pyelitis of pregnancy as a colon bacillus infection, distinguishing it from a puerperal infection, where it need not be due to the colon bacillus.

In regard to the etiology, I would say I think Dr. Davis brought out well the fact that a ureter which is traumatized, or has had its vitality lowered, is much more likely to become infected than one that has not.

A few years ago I went through the cadavers in the dissecting room at the College of Physicians and Surgeons and in the women who had been recently pregnant, I found the right ureter was dilated more frequently than the left, showing that there was more pressure on that ureter than the other.

It has been demonstrated that if you inject bacteria into the

\* For original article see page 383



blood, and if there is any lowering of the vitality of the kidney or ureter, that ureter or kidney will very likely be infected. With the vitality of the right ureter lowered by pregnancy, it seems perfectly easy for the colon bacillus to find an entrance as a hematogenous infection.

I confess that my experience in the treatment has been different from that of Dr. Davis. Personally, I do not believe it is a good idea to catheterize the ureters in pyelitis of pregnancy. I prefer to leave them alone, not to traumatize them and not to lower their vitality in any way lest the kidney itself should have its vitality lowered, even from the trauma of the ureteral catheter. I think the majority of cases will recover without the use of the catheter. There are some in which the kidney substance will become involved, but this is very unusual, and in my experience there have been only three cases in which the kidney had to be operated on. I would emphasize, then, first, that I think trauma of the kidney, or the urinary tract, should be avoided as far as possible. I admit there are some cases where the ureteral catheter has its advantages, but, as a rule, I believe it is better to avoid trauma of the urinary tract.

In regard to the kidney, there have been three cases in which it was necessary to remove the kidney, the infection having gone to the kidney substance, forming multiple abscesses throughout the same.

I would like to recite the history of one case which gives a fair picture of what pyelitis of pregnancy can do. This was a case that had pyelitis at about the fifth month of pregnancy. It involved within a few days the kidney substance and the right kidney had to be removed. She went on with her pregnancy. At eight months she developed a mild pyelitis of the left kidney. On the fifth day she went into labor and had a perfectly healthy baby. The pyelitis subsided on the seventh day, recurred between the fourteenth and sixteenth and then disappeared. In about three months she came back pregnant again. I thought that was too soon to tempt Providence and I emptied the uterus. Then a year ago she came back, pregnant again, with normal urine, and went on with that pregnancy with two days of mild pyelitis on the left side. That cleared up and this summer she was delivered of a large healthy baby and has had no trouble since.

DR. C. F. JELLINGHAUS.—I agree with Dr. Cragin that catheterization is not necessary, the diagnosis as a rule is easy. Pyelitis could hardly be confounded with anything but appendicitis. There is one surgeon in this town that sees at least ten cases a year in consultation where he is called in to operate for appendicitis during the latter months of pregnancy, when in reality they are cases of pyelitis. That is the only condition which can be confounded with pyelitis. I would also emphasize the fact that it is not necessary for diagnostic purposes to catheterize the ureters. I believe with that procedure you do more harm than good. There was one class of cases that Dr. Davis did not touch upon, namely, the cases that show the first symptoms either in labor or immediately after labor.



I believe in those cases it is good treatment to get the patients in the upright position as soon as possible after delivery to facilitate drainage from the pelvis of the kidney.

DR. WILLIAM S. STONE.—Dr. Davis spoke of the possible permanent effects on kidneys after pyelitis of pregnancy. I would like to ask Dr. Cragin, who introduced this subject to the profession, if he has had the opportunity of observing during the past few years any cases in which there has been permanent disease of the kidneys or the urinary tract following pyelitis of pregnancy.

DR. EDWIN S. CRAGIN.—I would simply say that in my experience it has been a temporary condition and that the kidneys have recovered and haven't given trouble later.

DR. WILLIAM E. STUDDIFORD.—I do not think it is very surprising to find cases of pyelitis of pregnancy when we bear in mind the frequency with which the urine contains colon bacillus, if a routine examination is made. About two years ago we started a routine culture of the urine of all patients admitted to the gynecological service in Bellevue Hospital. There were 893 specimens examined and of those a little over 19 per cent. showed the presence of colon bacillus. We were led to do that by bad results in some of our plastic cases, in two or three of which there was a very evident colon bacillus infection, and we found in those cases that the urine contained colon bacillus. After that we made it a routine to culture cases on admission and where the urine showed the colon bacillus we put the patients on urinary antiseptics, plenty of fluids, colon washings, etc., preparatory to operation. Since that time we rather dropped it as a routine, but still make the examination on our plastic cases and cases of cystocele. In cases where there has been a laceration of the pelvic floor, with possibly some laceration of the anterior wall, a very large percentage show the presence of colon bacillus, and we find that our after-results have been better by starting those cases on a preliminary treatment. We also get a good many patients coming in as cases of puerperal sepsis, with a clean lochia, a temperature of 102°–103° F. and a good deal of abdominal distention. In these cases we find either one kidney or the other affected, usually the right, as described by Dr. Davis. Culture in those cases will almost always show the presence of colon bacillus. Occasionally there is some other organism.

We have very seldom found it necessary to catheterize the ureter, and I agree with Dr. Cragin that the best thing to do in those cases is to let them alone and I feel sure that some of the bad results in these cases of colon bacillus infection where they have gone on to removal of the kidney have been the result of interference by catheterizing the ureter. I think they are much better if let alone.

DR. ALBERT H. ELY.—Referring to the question of etiology in these colon bacillus infections and the point as to whether pressure on the lymphatics plays any rôle in the etiology, I want to call attention to the frequency of constipation in all these women and the frequent use of calomel and saline cathartics. In the early stages, the pressure or some similar effect of saline cathartics seems to be

a factor in driving the colon bacillus through the lymphatic or blood current, whereas if you use good old fashioned castor oil in the early stages and keep away from saline cathartics, most of these cases do not require to be catheterized.

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*Meeting of December 11, 1917.*

*The President, DR. HIRAM N. VINEBERG, in the chair.*

DR. W. E. STUDDIFORD reported

A CASE OF ADENOCARCINOMA OF THE UTERUS AND OVARIES WITH  
SECONDARY VESICOVAGINAL FISTULA.

"I am presenting this case as one showing marked tolerance to surgical procedures. Patient A. G., was admitted to Bellevue Hospital, May 7, 1917. She was thirty-seven years of age, married ten years, never pregnant. Menstruation began at sixteen, 28-day type, lasting four days, up to five years ago, when she began to bleed twice a month. These symptoms continued up to two years ago, when she underwent an operation at Tampa, Florida. Since that time she has not menstruated regularly, but has had pains in the back and sides and intermittent uterine bleeding. She thought at this operation one ovary was removed. We were unable to get any reply to our inquiries from the original operator. She lost 10 pounds in the past six months. Her mother died of cancer of the stomach, one sister, and one uncle died of pulmonary tuberculosis. She has had chronic malaria; her last attack two years ago. About three months ago, she began to notice an enlargement of the lower part of the abdomen, and pains in the groins, radiating down the legs. She began to have irregular vomiting, and at the present time vomits immediately after eating, has constant nausea and headache. Examination showed the patient to be very much emaciated and the abdomen distended by a large semisolid tumor that reached well above the umbilicus. Patient was operated upon on May 26th. The omentum was found adherent to the tumor, breaking up of these adhesions was accompanied by profuse bleeding. Tumor was found to be of malignant growth of the right ovary; there were no adhesions in the upper abdomen and no secondary growths were found. The patient was in poor condition and removal of the tumor was hurriedly done and the abdomen closed. The patient made a rapid recovery from this operation and her general condition im-

proved markedly. The latter part of June, however, she began to have uterine bleeding and examination showed evidently a malignant growth of the cervical canal and a recurrence of the cystic mass on the right side, about the size of a golf ball. On July 18th, the abdomen was opened the second time. There were few omental adhesions over the cystic growth in the region of the right broad ligament. Cystic growth together with the uterus was firmly adherent to the bladder. In breaking up these adhesions, the bladder was opened; tear in the bladder wall was repaired by two rows of continuous sutures, and the uterus was removed. Pathological reports on these specimens were as follows:

No. 1., Mrs. A. G., Acc. No. 4682. Specimen consists of a mass removed from the ovary, measuring 25 by 20 by 15 cm. It is whitish or cream colored, irregularly rounded, coarsely lobulated and apparently enclosed in a connective-tissue capsule. It is firm in consistence. On section the mass cuts readily. The cut surface is pale, in places smooth, in other places finely reticulated. In still other places the reticulæ amount to actual cysts varying in size from the head of a pin up to several centimeters in diameter. The cysts are filled with a pale, smooth, glistening gelatinous, sticky substance. At several places on the surface the mass presents an appearance suggesting spontaneous or traumatic rupture. The mass is accompanied by a quantity of gelatinous material, together with some solid particles representing apparently masses of broken down tissue. Microscopic examination reveals a picture indistinguishable from an adenocarcinoma. The proliferating glandular elements are, however, unlike anything normally encountered in the ovary, bearing a strange resemblance to the adenocarcinoma which arise in the gall-bladder or stomach. However, there are those pathologists who would make a diagnosis of primary carcinoma of the ovary on the basis of histological examination of this tissue. There are others who maintain that there is no epithelial tissue in the ovary and that this growth would represent a mesothelioma. Distinction, of course, is largely an academic one since there can be no doubt about the malignant character of the growth.

No. 2. Specimen consists of a cystic mass, uterus and cervix.

The cystic mass measures 6 by 5 by 4.5 cm. and is almost circular in outline. The walls are irregular in thickness, and in places transmit light. On section the cavity is seen to consist of five separate loculi, all well distended with thick, glary mucus, probably pseudomucin.

The ovary has been pushed to one of the poles of the cyst, and is greatly shrunken, atrophied and sclerotic; it is almost completely enclosed in adhesions.

The uterus is completely distorted by a pale, ragged, extremely friable papillary growth which has completely replaced the fundus. Section shows an infiltration of the uterine wall with replacement of the endometrium by downward extension of the growth. The



cervical lips are markedly hypertrophied with old scars and ulceration of the superficial epithelium.

*Microscopical Examination*.—Section of growth in the fundus and of the intracystic growth, reveals a histological picture of adenocarcinoma. These sections are undistinguishable from the picture of the original ovarian growth removed in previous operation and reported as adenocarcinoma.

Patient made a good recovery from this operation. About twelve days later she began to complain of inability to control the urine. This dribbling of urine continued up to the time of her discharge from the hospital on August 15th, at which time, a small fistula, between the bladder and vagina, existed in the vault of the vagina. Patient was sent to the country for convalescence, where her general condition improved. She was readmitted to the hospital on November 13th for the purpose of closing the vesicovaginal fistula. The operation was performed on November 18th. The technic followed was the one advocated by Dr. Ward, the fistula being exposed by making an extensive paravaginal incision. It was remarkable to what extent the fistula could be brought into the operative field, after this incision had been made. The bladder was freed from the anterior vaginal wall, with a straight sound in the urethra, the fistula could be depressed so that it was an easy matter to close it by sutures. The paravaginal incision was closed by using interrupted sutures in the deeper structures, muscles and fascia and submucous and subcuticular stitch uniting the cut edges of vagina, mucous membrane and the skin. Patient was discharged from the hospital with the fistula entirely closed and good control of the bladder.

#### DISCUSSION.

DR. L. W. STRONG.—From the appearance of the growth and from the clinical story, it would seem to me to be a cystadenocarcinoma of the ovary, such as frequently metastasize into the uterus and which also have the peculiarity of not being as malignant clinically as one might expect from the gross appearance of the growths. When once removed *in toto* this form of tumor will not recur.

In answer to a question by Dr. Studdiford as to the primary character of the growth, Dr. Strong said that he regarded it as a typical cystadenocarcinoma of the ovary.

DR. DOUGAL BISSELL.—The feature of chief interest in the case reported by Dr. Studdiford is the complete removal of the malignant growth which had so extensively involved the tissues of the pelvis and as evidence of this complete removal the bladder injury inflicted at the time of operation was repaired, after a considerable length of time with success.

This case recalls one reported by me before the Gynecological Section of the Academy of Medicine several years ago of a malignant



disease of the corpus from the right side of which, and extending into the broad ligaments, was a large malignant mass through which the ureter passed. In removing the entire uterus and mass it was necessary to remove several inches of the right ureter and a large part of the bladder. The remaining portion of the right ureter was implanted in the reconstructed bladder. The patient's immediate recovery was as great a surprise to me as was the recovery of Dr. Studdiford's case to him. A large vesicovaginal fistula resulted, however, and both ureters could be seen in the vault of the vagina. Six or seven weeks after the operation the fistula was repaired successfully according to Emmet. Sixteen silver-wire sutures were used, proving as in Dr. Studdiford's case that the tissues left in the immediate region from which the tumor mass was removed were healthy. The patient died, however, eight or nine months later as the result of a metastatic condition of the liver or kidney.

DR. LEROY BROWN.—I would like to ask Dr. Studdiford with reference to the closing of the vesicovaginal fistula: Was there much scar tissue at the vault?

DR. W. E. STUDDIFORD.—The original scar in the bladder was transverse and the fistula was just below the scar and came right into the scar in the vault of the vagina, but it was possible with a sound to feel the old scar and depress it. It was a very small opening, the wide part of the funnel being in the bladder and the small part at the vaginal opening. We had to push it up to get hold of good bladder tissue and inverted the fistula, tying a ligature around the opening in the vagina and including the vagina and part of the bladder and any material that we could get hold of. The tissues held, however, and the patient did not have any leakage from the vagina.

DR. LEROY BROWN.—In the last vesicovaginal fistula I had occasion to operate, there was a good deal of scar tissue surrounding it and it occurred to me that it would be well to do a splitting operation. The parts were brought together in excellent apposition and I thought I was going to get good union, but it was a complete failure and, much to my mortification, the first one I had had for some time. It occurred to me at the time that I had made a mistake in using this method in the presence of scar tissue; that the circulation was disturbed and I thought I disturbed it more by following the splitting method. I feel on account of the failure in this case that I would have done better by following the old method and that is why I questioned Dr. Studdiford about his good result.

DR. F. R. OASTLER.—I think we should congratulate Dr. Studdiford on his results and the woman on her constitution.

I was very much interested in hearing how nicely the vesicovaginal fistula healed. I was also a little bit disappointed because about two and a half or more years ago I had a similar condition in a carcinoma of the uterus that I tried to remove and injured the bladder, which I also tried to repair, but failed. The wound remained closed for about six months and then reopened. The woman was rather dissatisfied with the result and went to somebody

else who made an effort to clear up the condition. After six or eight months she returned to me and on cystoscopic examination it was found that there was a stone in the bladder and she still had her vesicovaginal fistula. It occurred to me that in order to get the stone out and try to repair the fistula I would do something I had never tried before and that was a trans-vesical incision of the bladder, bringing the incision down to the fistulous opening (vesico vaginal fistula), removing the stone and then closing the whole thing, including the vesicovaginal fistula and the opening in the bladder with one continuous suture. Fortunately, that succeeded. She made an excellent recovery. There was no soiling of the peritoneal cavity and she has remained closed to date, but it seems in these fistulæ which are high up in the vagina and difficult to close on account of the scar tissue, we are warranted in doing a trans-vesical operation, cutting right straight down through the bladder to the fistula, denuding the surfaces of the fistula and sewing up the whole as one linear incision.

DR. W. E. STUDDIFORD.—“I have nothing to add except to say that this fistula was a very small one, but it was very inaccessible. It was at the vault of the vagina. The patient had a very narrow vaginal outlet and it was remarkable to see how the perineal incision, sweeping wide from the vault of the vagina off to the left and back to the coccyx brought the whole thing into view.” At this point in his remarks, the doctor went on to speak of the separation of the bladder from the vagina and referred to the further steps in the operative technic, after which he said: “Then, with a sound we were able to bring about a complete exposure and there was very little difficulty in closing the parts. The incision through the vagina and the pelvic floor healed promptly and, as a matter of fact, to-day you can hardly tell where the incision was made. There was no suppuration. It was a very good example of the result that can be obtained where you make a free peri-vaginal incision which gives plenty of room to reach these fistulæ which are high up, and I think in this case with the three laparotomies that she had had, the adhesions I would have found if I attempted a suprapubic operation, would have been very great.”

DR. GEO. L. BRODHEAD reported a case of

CESAREAN SECTION FOR BREECH PRESENTATION AND CONTRACTED PELVIS, COMPLICATED BY ACUTE LOBAR PNEUMONIA.

The patient, aged sixteen, married, para-i, was admitted to the obstetrical service of the Harlem Hospital, December 5, 1917, at 4 A. M. Family history, negative; past history, menstrual, venereal, medical, surgical histories, negative. Habits, good. The patient had been in labor ten hours prior to admission. Examination: young negress in dorsal decubitus, markedly dyspneic, respirations shallow and rapid. Herpes labialis was present and the patient had an unproductive, dry irritable cough. The temperature was 101° F., the pulse 138, respirations 54 per minute. The pulse was

rapid, feeble and easily compressible. Typical signs of lobar pneumonia were present over the lower lobe, viz., dullness, bronchial breathing, bronchial voice and many moist crepitant râles. The heart was normal in size, no murmurs present. Dr. Berliner of the Visiting Staff, corroborated the physical signs. The uterus was enlarged to the size of a nine months' pregnancy, and contractions were present every thirty to forty-five minutes, lasting ten to fifteen seconds. The fetus presented by the breech, left sacro-anterior and the head felt large. The fetal heart was heard 1 cm. below the umbilicus, rate 150. The cervix was soft, thin, the external os was four fingers dilated, the internal os not completely obliterated, breech presenting. The outlet was generally contracted. The promontory was not reached, the membranes ruptured. External measurements, between spines 22 cm., crests 23 cm., external conjugate 19 cm., obliques, rt. 18 cm., lt. 18.5 cm. The diagnosis was generally contracted pelvis, acute lobar pneumonia, frank breech presentation. Blood count, at this time showed white blood cells 18,000, polynuclears 84 per cent., lymphocytes 16 per cent. The woman was given cardiac stimulation and  $\frac{1}{2}$  c.c. of pituitrin. At 3 P. M. on the day of admission, twenty-eight hours after the onset of labor the patient was in the same condition as when first seen upon admission. She had not made any progress in her labor for the past ten hours. Dr. Lumbard administered chloroform-oxygen anesthesia and a classical abdominal Cesarean section was done in twenty-five minutes. A live, vigorous 7-pound male was born, crying feebly, and in fair condition. One hour after the operation the condition of the mother showed marked improvement. Her respirations were regular, deeper than before, about forty per minute. Her pulse was 100, regular, of fairly good volume, cardiac stimulation continued. During the next day the mother felt very comfortable. Her pulse was regular, about 104 per minute, respiration less labored and patient asked for food repeatedly. No abdominal tenderness, rigidity or vomiting. The following day, forty-eight hours after the operation, she developed a severe attack of pulmonary edema and cardiac decompensation, and in spite of cardiac stimulants, she died at 5 P. M. The baby lived twenty-one hours, taking its nourishment, crying feebly and sleeping well, when it suddenly became dyspneic and died in a few minutes. Postmortem Findings. Mother's pelvis showed a diagonal conjugate of 11 cm., true conjugate 9.5 cm., transverse diameter of outlet, 8.5 cm., posterior sagittal, 7 cm. A closed fist could not be pushed through the outlet either from below upward, or from above downward. The left lower lobe of the lung was consolidated, and showed evidence of red and gray hepatization. Upper lobe was edematous. Right lung was adherent at the apex, and the base showed a large patch of consolidation. The uterus and abdomen were normal.

Baby—The left lung was completely atelectatic, no area of crepitation except the anterior part of the upper lobe. Right lung—The upper portion of the upper lobe was the only portion not atelectatic. About five-sixths of the lung tissue was atelectatic. In conclusion, we



believe that under the circumstances, Cesarean section offered both mother and child the very best possible chance for life, and while the outcome was unfortunate, it was due in no way to the operation. The cause of death was undoubtedly the acute lobar pneumonia.

DR. F. R. OASTLER reported two cases of

#### SPONTANEOUS RUPTURE OF THE UTERUS.

CASE I.—This patient twenty-five years of age, single, was admitted to the Lincoln Hospital November 10, 1917. She was a para-ii and gave a history of a previous labor at Fordham Hospital fourteen months ago which was terminated by a basiotripsy following exhaustion and the death of the fetus. The patient was admitted to the hospital at 7 A. M. having had pains for six hours. Strong contractions continued through the day and at 5 P. M. a sudden cessation of the pains occurred. The contour of the abdomen changed and a large mass could be palpated under the ribs on the left side, with a smaller mass low down on the right side of the abdomen. The patient rapidly went into collapse. An immediate operation was undertaken and on opening the abdomen the child was found free among the intestinal coils, together with the placenta. The uterus was found to be contracted and showed a transverse rent at the level of the uterovesical fold. There was very little hemorrhage present. A supravaginal hysterectomy was done and the patient made a complete recovery although she developed a severe bronchial pneumonia.

The interesting features of the case were (1) spontaneous rupture, (2) rupture during the first stage of labor, (3) possible injury to the uterus at the time of the previous delivery.

CASE II.—Mrs. M. E., twenty-six years of age, admitted to Lincoln Hospital December 2, 1917 with a complaint of fainting attacks, continuous vomiting and abdominal pain. The patient had always been well until 1910 when, as the result of a fall and heavy work, she developed a prolapse of the uterus and was operated on in the German Hospital. She was married in 1912 and her first pregnancy was terminated by Cesarean section at the Lying-In Hospital for the following indications: rhachitic pelvis, pendulous abdomen, breech presentation, prolonged labor without progress. Bronchitis and tonsillitis developed during the puerperium, as well as thrombophlebitis of one leg. In 1916 she was operated upon in St. Francis Hospital. The uterus was found adherent to the abdominal wall and there were likewise extensive adhesions of the omentum and sigmoid. These were freed and a curettage also performed. The history of the present pregnancy was uneventful up to two days before admission to the hospital when the patient fainted on getting up. There was no pain but the patient vomited. She fainted again in the afternoon and following this the abdomen became enlarged and the patient complained of shortness of breath. The attacks of pain and fainting continued and were accompanied by the vomiting of large amounts of coffee-colored material. She was admitted



at 8.30 P. M. on the second day of her illness in a condition of marked pallor, shock, and with a rectal temperature of  $98^{\circ}$ , pulse 132, respirations 44. The abdomen was greatly distended, markedly tender and tympanitic. The back of the fetus was made out with difficulty on the left side. There was no vaginal bleeding. The cervix was thick, not dilated, and the head was felt floating above the brim. The sacral promontory could not be reached. The external pelvic measurements were ample and the blood count showed 4,800,000 red cells; 96 per cent. polynuclears; hemoglobin 60 per cent. This high red cell count was probably an error because the patient was very pallid and a large amount of blood was subsequently found in the peritoneal cavity. The urine showed albumin and granular casts. Operation was done at 10.30 P. M., a median incision about 4 inches long being made, one-fourth above and three-fourths below the umbilicus. The omentum was found adherent to the anterior abdominal wall and on separating the adhesions a quantity of blood escaped and the amniotic sac presented. This was ruptured and a large fetus extracted which was macerated. The placenta was free in the peritoneal cavity and removed with the membranes and a large quantity of clotted blood. The uterus was contracted and presented a large tear extending across the fundus anteroposteriorly. The uterus was found to be firmly attached by its anterior surface to the abdominal wall and after it was freed a supravaginal hysterectomy was performed. The patient made an uneventful recovery.

#### DISCUSSION.

DR. W. E. STUDDIFORD.—I have seen two cases within the past two years of rupture of the Cesarean scar with the fetus and membranes free in the abdomen. The first case was seen some five or six days or a week after the rupture had occurred. The woman was supposed to have had a delayed labor and an attempt had been made to put in a bag to dilate the cervix, with the result that she became infected and on opening the abdomen we found the fetus with the membranes in a bad state of decomposition and general peritonitis present. Of course, that woman promptly died in spite of the efforts at removal. In the other case the woman was admitted to the hospital with all the symptoms of intestinal obstruction. I saw her at the time she was admitted and from her history suggested to the Division in whose care she was that she had a rupture of a Cesarean scar. She was not transferred for operation. She began to improve in about twenty-four or forty-eight hours and the symptoms subsided and she was up and around the wards for a week and then was transferred to the gynecological service. At that time the uterus was the size of a seven and one-half or eight months' pregnancy, and, as I say, the symptoms subsided, but at the time she came to us for operation the uterus had contracted down to about the size of a uterus at the third or fourth month of pregnancy. We opened the abdomen and found the fetus and membranes free and

simply lifted the whole sac out, found the rent in the uterus and did as Dr. Oastler did, a suprapubic hysterectomy.

The interesting thing to me and something I would like Dr. Oastler to describe, was the site of the incision in the uterus, for I think this is a very important point in Cesarean section. In both of these cases the incision was to the left of the median line and started off in an oblique direction down through the anterior surface of the uterus. The upper end of the incision was about where the round ligament is given off on the left side and came down in an oblique direction and ran across the midline.

I believe the reason for rupture in both these cases was the improper incision made at the time of the original Cesarean section. It is easy to see that if you make an oblique incision going off to the side, you must get a long muscular flap going down in a sliding direction through the uterus and when you come to sew it after the uterus contracts following the delivery of the child, there is poor apposition, whereas if you go directly in the median line, you get even traction, and it is easier to sew up. If it is possible to do so, the incision must be directly in the median line and then there is less liability for this condition to occur.

DR. JOHN O. POLAK.—Another point has impressed me from my experience with postoperative ruptures and is borne out in this specimen, namely that in making an incision high up in the fundal portion we utilize the weakest portion of the upper segment. Rupture occurs more frequently than in the low incisions. I have seen four cases of spontaneous rupture of the uterus following Cesarean section. They have all been in very high incisions extending into the fundus. Three of these have been oblique incisions coming down from the fundal side of one cornua and it has seemed to me in looking at this specimen that when we are dealing with incisions in the contractile portion of the uterus we must keep below the tubal insertions in the median line if we expect to get a strong scar. This is difficult owing to the torsion of the uterus, which tends to make us incise the uterus obliquely through the circular arrangement of fibers which follow down from the tubal insertion. It was for that reason we adopted some time ago the low incision, the so-called extraperitoneal section. So far I have not found rupture in cases in which the low incision has been used.

DR. W. H. CARY.—I recently had the opportunity of performing a second Cesarean operation at a time when apparently the first scar was in the process of rupture. This patient had been operated upon for a contraction ring dystocia and the house officer had reported to me on looking up the history that she had made a perfectly normal convalescence but this was later found to be untrue. She had a face presentation and in view of the fact that she made a bad start and had a previous Cesarean section, although she had only been two or three hours in labor, we decided to do a second Cesarean section operation. On opening the abdomen I found just what Dr. Studdiford referred to, that the previous operator had started his incision to the right of the median part of the uterus, run-

ning it obliquely down to the right broad ligament. To this had become attached a dense, heavy adhesion of omentum and peritoneum, that had attached itself to the lower two-thirds of the scar, fixing the uterus. This bothered me considerably because I wished to make my incision in the median line of the uterus but was unable to rotate it because it was absolutely fixed. It is questionable whether it would have been possible to sever this adhesion. At the upper third of the incision there was a deep ecchymosis, hemorrhage having taken place in the muscular part of the uterus. The serous surface was smooth. The uterus was thinned from within outward and ruptured with a gushing hemorrhage while I was attacking the adhesion. Under the circumstances I had no choice but to do a quick Cesarean section beginning my incision at the rupture point, sterilize the woman and sew her up. She made a good recovery and had a live baby, but the facts of the case were entirely in accord with Dr. Studdiford's statement with reference to the incision.

DR. G. W. KOSMAK.—I believe I must say something for the high incision, which has been developed by Dr. Davis of the Lying-In Hospital, as he is not here.

In answering you will permit me first to reply to Dr. Polak's remarks about the liability of the incision in the upper part of the uterus rupturing more readily than one in the lower part. I am not prepared to compare the two series of operations, but I know that in Dr. Davis' series in which the incision has always been made high up, there has apparently been no more liability to rupture than in other cases in which the incision has been made low down. The position of the incision that Dr. Polak refers to is, however, a very important matter and in our cases we make an effort to rotate the uterus to correct its displacement, so the incision is always made in the median line if possible. The high operation, so called, has so many advantages that we do not consider it is outweighed by the greater possibility of a rupture, because the uterine incision is at or near the fundus.

Question Addressed to DR. OASTLER.—The uterus was opened low down, wasn't it?

DR. OASTLER.—It was absolutely impossible to tell. The omentum was right over the top of the uterus, and plastered down, and the uterus, ovaries and everything were agglutinated and involved the omentum and uterine fundus. You could not tell where the previous scar had been.

DR. KOSMAK.—I am not prepared to quote statistics as to the number of ruptures that we have had in women following previous operation, but my personal experience leads me to think that the question of infection has little to do with the possibility of rupture. One of the most serious cases of infection which I have had was in a primipara with a very fat abdomen who had been in labor for two days and in that case numerous examinations were made before a Cesarean was done. She made a complete recovery after being septic for several weeks, and she had a broken-down abdominal wound that took a long time to heal up. I operated on her a second



time last July and following the ordinarily accepted belief that the uterine scar was in bad condition, I did not leave her in labor for more than two hours before I did another Cesarean. After opening the abdominal cavity I found just a few omental adhesions to the scar. There was absolutely no thinning, so even in the face of severe infection the uterus eventually recovered its normal tone.

I feel the time that elapses between pregnancies after Cesarean section has a very important bearing on the character of the scar. The musculature of the individual also counts for a good deal. Some stand more handling than others. Cases in which Dr. Davis has done repeated Cesarean sections have in the majority of cases had good tissues.

DR. FLORIAN KRUG.—A few years ago, in a discussion which took place at the meeting of the American Gynecological Society, we were told that Cesarean section was the ideal method of confining women. Repeated Cesarean section was heralded as an easy way of cheating nature out of her labors, incidentally being less troublesome and possibly more profitable to the obstetrical surgeon. I could not agree with the speaker. I thought that he was either too progressive or I was too conservative in my ideas. The discussion to-night has given ample proof that, far from being the ideal condition, to have a cicatrix in the uterus following Cesarean section whether high or low, straight or oblique, is certainly a predisposing factor to spontaneous rupture of the uterus in a recurring pregnancy. It is my earnest conviction that it is not only our right but that it becomes our duty before doing a Cesarean section for any cause (I refer only to cases where Cesarean section is strictly indicated), to inform the patient and her husband, or the relatives who happen to be in charge of the case, while preparations are being made, that there is such a thing as tubal sterilization. It should be at the option of the patient and her husband to decide whether by submitting to *one* Cesarean section she has or has not done her bit. At any rate she should not be considered a slacker if she refuses to run the risk of subsequent pregnancies. While the abdomen is open sterilization can be done in an additional five minutes. I think that too often we neglect to give this any consideration but I think the woman is entitled to have her choice in the matter.

DR. HERMANN GRAD.—A few weeks ago I had occasion to do a Cesarean section. The house officer was helping me and I said that we would make an incision in the midline after correcting the displacement of the uterus. Accordingly the incision was made, as I thought, in the midline. When we got through sewing up the incision we found it was in the oblique direction. The baby in this case was a large one, weighing 11 pounds and 9 ounces, and in a transverse position. The woman had had a previous operation, the uterus was fixed and there was considerable distortion of the same, so that, notwithstanding the fact that we had tried to make a median incision, the incision, just as the doctor has described, started in the midline and went off toward the left. Sometimes the distortion



of the uterus is such that you cannot avoid the wrong direction of the incision.

DR. F. R. OASTLER.—I think Dr. Grad has sounded the important note with respect to the incision. My experience has been very similar to his. Even if you take a uterus which is turned to one side or the other and try to make a vertical incision, very often after sewing it up you will find that the incision is an oblique one, and considering the lines or planes of muscular fibers of the uterus, it isn't at all difficult to understand why the incision is very often oblique because the muscular fibers run transversely, obliquely and vertically. Upon the preponderance of the fibers depends the position of the scar. I think that answers Dr. Studdiford's question about the oblique incision and undoubtedly a great many incisions are oblique that started originally as straight incisions. They become oblique on account of the musculature. Although the oblique incision may have something to do with rupture, it doesn't seem to me to be the real answer. I think a great many of our ruptures, as I said when this subject was last discussed here, following Cesarean section are due to the fact that we pull our sutures too tightly, consequently they shut off the blood supply along the line of incision and when the uterus heals up it heals as fibrous tissue instead of muscular tissue. We always expect to get some fibrous tissue, but I believe that if the suture line shuts off the blood supply too much, the result is that it tends to transform muscular tissue into fibrous tissue. I believe that has more to do with the secondary ruptures than the oblique incision.

DR. JOHN O. POLAK presented a report of a case of

#### UTERINE FIBROID WITH MALIGNANT CHANGES AND COMPLICATED BY THYROID DISEASE.

The patient aged sixteen from whom this specimen is taken presents several points of more than passing interest. First, the patient was suffering from exophthalmic goiter, having had both inferior and superior thyroid arteries tied and subsequently the left lobe of the gland removed by Dr. John Rogers of New York. Second, there was a definite myocarditis with reduplication of the heart sounds, and fibrillation with tachycardia, until September of this year. Since that time under rest, ice to the precordium and the internal administration of the hydrobromide of quinine and strophanthus, her cardiac condition has improved. Third, this patient has been the subject of a multinodular fibroid growth filling the entire pelvis and the hypogastric region, since she was thirty years of age. The menopause was uncomplicated and she complained of symptoms until the latter part of August, when she noticed blood-stains on her underwear. During the first part of September of this year, she had a rather profuse hemorrhage, and since that time she has had a persistent metrorrhagia.

Such a history is indicative of but one condition, a lawless change taking place in some part of the tumor and, on consultation with

her physician we decided that an operative procedure was necessary. In view of the hyperthyroidism and existing myocarditis, the question arose as to her cardiac strength. This was estimated by pulse pressure readings, taken on successive days in different postures, and after exercise. Her systolic pressure reclining was 188, while her diastolic was 100. On sitting, the systolic was 196, diastolic 100. After slight exercise including flexion of the arms, the pressures were 200/100. After strenuous exercise, such as body bending and lifting of 1- or 2-pound weights, the systolic pressure was 200 over 102. This showed us that her cardiac strength was not influenced by exertion, and we felt that operation would be safe on such a patient.

The next index we inquired into was her phenolphthalein output which showed 45 per cent. the first hour and 35 per cent. the second hour. This as you will notice is high, but is only commensurate with the increase in her pulse-pressure, for we have found that cardiac efficiency bears a direct relation to renal efficiency as shown by the phenolphthalein output and pulse-pressure.

This patient was operated this morning and the specimen shown demonstrated the degenerative changes in two parts of the fibroid tumor

In the light of the discussion this evening on radium, the presentation of such a tumor as this shows the necessity for selection of mode of treatment in every fibroid case.

*Pathological Examination.*—The gross specimen shows a moderately large multinodular tumor of the uterus with the cervix and the ovaries and tubes attached. The uterine mass measures  $15 \times 8 \times 9$  cm. There are three small pedunculated growths from the right posterior fundal wall and a fibrocystic mass  $10 \times 8 \times 7$  cm. arising from just above the cervicouterine junction. Posteriorly the surface of this tumor has lost its epithelial covering and on section shows sarcomatous degeneration. The lateral tumors come from the sides of the cervix spreading the folds of each broad ligament. The uterus was rotated to the right as is shown by the disposition of the uterine arteries. The left ovary has multiple cystic while the right contains a single cyst. Both tubes show senile atrophy. Incision of the uterus anteriorly from the cervix to the fundus shows three intramural tumors, the cavity is distended with a degenerating polyp and the degenerative changes penetrate the uterine mucosa.

#### DISCUSSION.

DR. LE ROY BROWN.—I would like to ask Dr. Polak if he is inclined to think the myocardial changes which he recognized in this heart were due to the presence of the fibroid and not simply coincident with it.

DR. W. E. STUDDIFORD.—Dr. Polak has brought up a point in connection with fibroids that has been of interest to me for a long time. I read a paper about two years ago on the question of myocarditis and high blood pressure associated with fibroids, based on a report of some eight or ten cases that had occurred in our service

at Bellevue Hospital, in which the blood pressure had ranged from 180 up to 210, all of them in women over forty years of age. In the majority of them the existence of the fibroid had been known for a number of years, and the majority on the advice of medical men, had been told to let the fibroids alone, that when the menopause came around they would disappear. The fibroids had not disappeared and in a number of them there had been changes, not malignant changes, but changes in the fibroid itself, evidently due to interference with the vascular supply. There is no doubt in my mind that the myocardial changes that are associated with fibroids (Dr. Boldt was one of the first to write on that subject) are dependent on the fibroids themselves. There have been various theories advanced as to whether secretion from the tumors is responsible, but I believe it is an interference with the circulation of the uterus that is responsible for it, and that you get these myocardial changes dependent, not on the size of the tumor, but apparently on the location of the tumor. If you have a tumor that interferes with the circulation or you have a woman approaching the menopause with changes in the uterine muscle so that it weakens it, you get a secondary backing up with an increase in the arterial pressure and that on the heart, resulting in myocardial changes. I have a case now in the hospital, a woman fifty-six years of age who came in with a fibroid that she had known of for ten years, with acute symptoms referable to the tumor. The preoperative diagnosis was that she was developing a beginning necrosis of the growth, probably from obstructed circulation. It turned out at operation that there were minute hemorrhages through one of the tumors.

At this point in the discussion, the doctor touched on the point of testing the heart muscle as Dr. Polak had mentioned and went on to say: "I watch all these cases and put them in bed for two or three weeks before operation, testing the cardiac efficiency unless there is something that is urgent. The case I referred to suddenly developed twelve days after operation a cardiac dilatation. That has subsided and the woman is in bed convalescent again, but there is no doubt her myocardial disease was largely due to the presence of the tumors and if they had been taken out earlier, the myocardial disease would not have taken place.

Dr. Studdiford stated that the cardiac condition of the patients should be noted and if they develop an increased blood pressure and cardiac symptoms which cannot be accounted for in any other way, the fibroid should receive attention, and he is of the belief that a great many cases should be operated on that are now let alone.

DR. E. W. PINKHAM.—There is just one point in this case which it seems to me has not been spoken of, and that is the existence of the thyroid condition. I was wondering, in view of what Dr. Studdiford said, how much the fibroid condition had to do with the heart in the presence of this hyperthyroidism. I know of a case in which the heart presents practically the same condition that this case presented and in which the blood pressure is running about the same. She



has no fibroids at all, but the heart lesion is due primarily to her thyroid condition.

DR. J. O. POLAK.—The thyroid seemed to me the most important proposition here as the etiological factor of the cardiac condition. The point I wanted to bring out is the tests that we have found of value in estimating hearts and the relation of the kidney output to pulse pressure. We have found, for instance, that if a patient has a low pulse pressure with a kidney output of, say, 29 to 30 phenolphthalein for two hours, she is a bad cardiac risk. On the other hand, if she has a high pulse pressure with a low phenolphthalein, she is a fairly good cardiac risk.

DR. DOUGAL BISSELL described a

TECHNIC FOR PREVENTING ABDOMINAL ADHESIONS WITH THE AID OF A  
SPECIAL RUBBER LAPAROTOMY PAD.

The device consists of a thin rubber envelope in which a pad of several layers of cloth, preferably made from an old towel is placed. This envelope is made of ordinary rubber dam, the larger size 8 inches square, the smaller 4 by 8 inches. These envelopes are easily made by folding a 16 by 8 inches or a 16 by 4 sheet upon itself and sticking the lateral edges together with rubber paste, the kind with which rubber gloves are mended. The free edges are reinforced by being folded upon themselves  $\frac{1}{4}$  inch or more and through the middle of each is made an opening sufficiently large to permit of the passing of the tape which is attached to the towel pad within. In this way the envelope is closed sufficiently to keep the cloth pad in position and prevent it from coming in contact with the intestines, yet sufficiently open to allow the fluids of the abdomen to enter and be absorbed by the cloth within. These rubber envelope pads are sufficiently pliable to be conveniently handled and as they have a greater body or resisting force than the ordinary gauze pads, they hold back the intestines from the field of operation with greater certainty. Because of their smooth surface they may remain in contact with the intestines an indefinite time, without in the least irritating the peritoneum.

DR. W. S. STONE read a paper entitled

AN ESTIMATE OF RADIUM IN UTERINE CANCER.\*

DISCUSSION.

DR. G. H. MALLETT.—I think the estimate which Dr. Stone has placed on radium is quite a fair one and I quite agree with it. The paper has covered the ground so thoroughly, however, that there is very little left to be said. I also desire to add to what he said in regard to Dr. Bailey's technic because I know that in the early days we had great trouble in applying radium. It is extremely dangerous unless it is applied accurately. I think Dr.

\* For original article see page 390.



Bailey will bear me out when I say that we had a great many fistulæ during the first year or two. I think there were about 20 per cent. in the first year, whereas last year we had considerably less, 5 per cent. I think it was. (Dr. Bailey gave it as 6 during the course of Dr. Mallett's discussion.) That is not much. We used to approach the treatment of these cases with fear and trembling, but since his technic has been devised there is a feeling of much greater assurance on our part. It has changed the whole character of the treatment of carcinoma in the General Memorial Hospital. Formerly patients came there and we would give them the most isolated ward and do what we could to make their last days bearable, but now those foul-smelling cases are turned into very clean cases. Radium has cleared up the discharge and given them great comfort. The final results remain to be seen, but they now exceed anything that was expected and I think it is the best agent we have in those cases.

Something might be said in regard to the question of prophylaxis. The cases which are sent there are usually sent after recurrences have come and if they are to be sent at all I would say that one of the most important things is to send them very early, before a recurrence has manifested itself.

DR. L. W. STRONG.—It seems to me that in considering the effect of treatment of carcinoma of the uterus, whether by x-ray, radium or surgery it would be very desirable, from the point of view of statistics, to get an accurate understanding, to make a very sharp distinction between cervical carcinoma and that of the body and the fundus, where it is of the adenomatous type. In my experience cervical carcinoma is always quickly invasive and is very much more difficult to handle and the results in general are quite different from those of the body. We do occasionally meet with a case of carcinoma of the body which is cured by simple curetment, and in looking up a great many uteri which were removed for other reasons (perhaps for myoma), I am frequently struck by the fact that they are incipient carcinomata in the mucosa which would very possibly not progress to an extensive degree. It seems to me that it is quite a different story from carcinoma of the cervix and in view of that, it would be very wise to make a sharp distinction between the two.

DR. H. C. TAYLOR.—I believe that in the treatment of any cancer there are three possible objects to be obtained. The first is a permanent cure; the second is greater comfort during the remainder of the patient's life; and the third is prolongation of life. The importance of these three objects is in the order given. I do not desire to belittle the question of prolonging life but the prolongation of life in many ways is not as important as the increased comfort while it lasts.

First, so far as the curing the patient is concerned, we must be willing to take a very big risk in order to increase the chance of permanent cure. Any of us would have performed the most radical operation irrespective of the primary mortality if it promised a

greater chance of a permanent cure. Certainly we would be willing to take a double risk if we could increase the chance of permanent cure by one-half.

In the treatment of cancer of the uterus my custom at present is to use radium first. I apply radium, wait four or five days and then do a hysterectomy as radically as the case will allow, though not necessarily a Wertheim operation, and then before the patient leaves the hospital, but after the wounds are healed, I use radium again as a prophylactic. This is the plan I am working on at the present time and I think it is a good one. There is no question but that an hysterectomy is more difficult after the use of radium and it increases the risk of operation, but the increased risk is more than offset by the increased percentage of permanent cures that I hope will be obtained. There is no doubt of the value of radium for the inoperable case. It certainly stops the bleeding and clears up the discharge far more quickly than anything else I have used and with very little discomfort of the patient; much less discomfort and better result than any form of cauterization.

DR. DOUGAL BISSELL.—A method of treatment of cancer of the cervix not mentioned in the discussion this evening, which to my mind is of great value, is zinc chloride, 50 per cent. aq. sol. It is an old remedy but practically discarded. Its advantages are several. It attacks extensively and preferably the diseased tissue, causing a great slough to be thrown off. Bleeding and foul discharges are relieved almost invariably. It does not stop the growth inwardly but checks its extension in the immediate area of the vaginal vault and sometimes the entire vaginal vault becomes covered with an apparently healthy tissue.

The technic I employ when this solution is used is, first scraping away the growth down to firm tissue, then applying the actual cautery to this firmer tissue and in the cavity of the cervix thus formed, a small roll of cotton is placed which has been first saturated with the zinc chloride solution and thoroughly squeezed to eliminate an excess of the solution. About the roll of cotton is tied a string for convenience when removing the roll. To prevent any excess of the solution from attacking the vaginal tissue, a strip of iodoform gauze saturated with melted vaseline is packed in the vagina. By this means the cotton ball is kept in place and the vagina is protected.

The use of zinc is of particular value in the treatment of inoperable cases.

DR. FLORIAN KRUG.—As I have been asked to give my experience with and my views on the chloride of zinc method in uterine cancer, I want to state that I have never been guilty of that procedure. Of all the palliative and symptomatic expedients advocated in the treatment of inoperable cancers of the uterus, I have found the acetone method as recommended by Dr. Gellhorn of St. Louis by far the best. I still use it and believe that the results obtained with radium would not preclude its use. I consider it particularly valuable in cases where you are afraid of vesicovaginal and rectovaginal

fistulæ. Hardening the tissues the acetone prevents their early breaking down and reduces the occurrence of fistulæ considerably. I recommend the combined use of radium and acetone in suitable cases.

DR. H. J. BOLDT.—The question Dr. Taylor asked with regard to the interval of re-application of the radium, interested me very much. Sometime ago (perhaps ten weeks) a patient who had been operated on by a member of this Society and had a recurrence, consulted me. The operation in that instance was a vaginal hysterectomy. There was no question with regard to the recurrence. A small piece of exuberant tissue at the vault of the vagina was removed and on examination pathologically found to be carcinomatous. The patient had been advised to have the cautery used on her and in consequence of that she consulted me. I hesitated to advise the use of the cautery because it was so near the bladder. I was afraid in case the cautery were used that there might be a secondary slough and fistula in the bladder. She was sent to Dr. Kelly for radium treatment and after four weeks' time I had an opportunity to re-examine her. I found the induration in the vault of the vagina very materially diminished. The patient having been told to go back to Dr. Kelly in four weeks' time, I advised her to return, when Dr. Kelly wrote, saying that she should be given a little more time and allowed another four weeks, and that if the induration did not disappear entirely at the end of that time he would be glad to make another application. After the second four weeks had elapsed there was hardly any evidence of induration. There was a little thickening, but it was very questionable in my mind whether that was a malignant infiltration (it was so slight) or whether it was only thickened scar tissue, so that it would seem to me to show that we have by no means yet reached the point as to how often we should re-apply radium for the purpose of securing the most benefit.

DR. HAROLD BAILEY.—In the last three years there has been a particular technic carried out throughout the year. In 1915 cases had re-applications about a week or ten days apart of 2 millimeters of lead, and the dose was small, about 50 millicuries of the emanation corresponding to about 100 millicuries of the salt. Exposure time was between fifteen and twenty-four hours. A large proportion of the cases suffered from the effects of what is sometimes called radium burn. They practically all had sloughs, a large proportion had marked proctitis, and a considerable number also had cystitis. I know of no suffering which corresponds to the double suffering of a proctitis and cystitis caused by radium. Practically nothing will relieve the pain. Morphine relieves it only temporarily. For the relief of this pain we give tincture of hyoscyamus, 30 minims every three hours. If that does not relieve the spasm we give a capsule containing  $\frac{1}{2}$  grain of codeine, 5 grains of phenacetine and 5 grains of aspirin every three or four hours, depending on the severity of the pain. The pain and tenesmus last a long time, coming on usually six or eight weeks after the application and lasting sometimes three months. About 20 per cent. of the first fifty cases had



fistulæ, either in the rectum or in the bladder. A third were Percy cases, a third recurrent cancer and about a third were primary.

In the 1916 cases re-applications were made about the same length of time (a week or ten days) and the radium was encased in platinum instead of lead, a millimeter to a millimeter and a half. The platinum is a very much better filter than the lead. At the end of that year we found about 6 per cent. of fistulæ, but we had a great many cases of irritation. During the year 1916 we experimented with a large mass of lead for a filter, together with a capsule filled with mercury and were able to apply anywhere up to 1000 millicuries, the average being 700 millicuries. With this mercury filter we were able to apply it against the cervix for two hours and then to each side over the parametrium for an hour each. We have also a dose of radium in platinum within the cervix as high as it can be placed; then, outside, the patient has applications of the same amount (about 750 millicuries) across the lower part of the abdomen and usually also across the sacrum. The mass was usually put at 4 centimeters and kept there until the amount averaged 3000 hours. This year there have been only two fistulæ in something like ninety cases and while there have been some cases of irritation there have not been more than two or three cases of proctitis and no cases of cystitis.

DR. W. S. STONE.—In regard to the question of the dosage. Dr. Bailey who gives the treatment in these cases is in a better position to describe it. At the Memorial Hospital, where we use the emanation, we are using very much larger quantities than may be necessary. We all feel that there is a difference between using a large amount of radium over a short period and a small amount over a longer period. To measure the dosage in millicurie hours, therefore, does not exactly express the dosage. There is no doubt in my mind but that the first dosage should be as large as possible without destroying neighboring structures. You want the most effective dosage at that time and then, according to my judgment, we should wait and observe the effects of the radium before making another treatment. Changes in the cervix are not so easy to observe as lesions in other parts of the body. A superficial ulcer will rapidly diminish in size and the induration will disappear so that apparently you have a simple ulcer which may remain as such for a long time. If it does not heal you are tempted to apply radium and, after doing so the nutrition not only of the ulcer but of the tissues around it, has been so affected by your first dose that no matter how small your second dose may be, you get necrosis which may never heal.

In regard to the question of the comparative value of the emanation and the radium salt, radium emanation according to the physicists has the same radioactivity of 100 milligrams of radium. Dr. Strong's point in regard to the difference in the histological and anatomical features of cervical and corpus tumors is very true, but we have not treated many early or border-line lesions. In a large number of cases you cannot tell whether it began in the cervix or the body. I hesitate to say very much about the treatment of carcinoma of the body of the uterus (early lesions) with radium, because



these are the cases in which the best results have been achieved by operation, but I think those early lesions in the uterine body can be easily cured by radium.

In regard to the prophylactic use of radium after operations it has as good a theoretical basis as the use of x-ray after operations for mammary cancer but it is more difficult to apply and, as Dr. Mallett said, there are many cases which are sent to us for prophylactic treatment in which there is no doubt that they already have an extension of the disease. It is a difficult matter to use radium for prophylactic treatment of the pelvic tissues. You must apply the radium to the vaginal vault and lower abdomen and it takes 500 to 600 millicuries of radium for twenty-four hours to do it. It is going to be a long time before we shall be able to estimate its value. If a physician sends you a case of carcinoma of the uterus which has been operated on and is apparently free of the disease and if, after prophylactic treatment with radium, in five or six weeks' time the patient has a well-marked extension of the disease, the effects of radium will be misjudged. If you have the emanation at your disposal and can get the tubes at low power they may be wrapped up in the drain of the vaginal vault at the time of operation and perhaps with good effect, as the radioactivity diminishes rapidly and you will not seriously injure the neighboring tissues.

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## TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF PHILADELPHIA.

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*Meeting of November 1, 1917.*

*The President, DR. FRANK C. HAMMOND, in the Chair.*

DR. J. C. APPLEGATE read a paper on

REPORT OF FIBROMYXOMATOUS DEGENERATION OF THE  
CHORION OCCURRING WITH FOUR CONSECUTIVE  
PREGNANCIES.\*

DISCUSSION.

DR. GEORGE M. BOYD.—We have seen from time to time in the Hospital, cases which resemble the history of that described by Dr. Applegate. In very many of our cases the fibrous degeneration of the placenta and its partial separation have been syphilitic in origin. In the course of the ravages of lues we get a picture much like this. The paper is important, calling our attention to the anticipation of hemorrhage during pregnancy and to the methods of dealing with the partially or totally separated placenta at term. These cases form a group about which we all feel extremely anxious. I do not know

\* For original article see page 400.

that I have seen just such a placenta as mentioned here and I note that in Dr. Applegate's review of the literature he finds it extremely rare. In this case the fibromyxomatous degeneration evidently did not take place until the placenta was formed. This is unusual.

DR. EDWARD A. SCHUMANN.—Dr. Applegate has asked for discussion along various lines; first, regarding etiology. We all know as much about the etiology of the disease as he does, no more or no less, that is to say, we know nothing. It is extremely interesting to note that in four successive pregnancies this woman developed fibromyxomatous degeneration of the placenta. Usually in these cases the fetus is affected early in its career and the case resolves itself into a fleshy mole. We know that the condition is sometimes due to faulty implantation of the ovum. Mall studied the fetus with regard to monster formations in a long series of cases of early abortions of intrauterine pregnancies and in ectopic. He found as many cases of abnormal fetuses in extrauterine pregnancies as in intrauterine.

Regarding sterilization in these cases I believe it is distinctly the woman's right to say what she should have done. That she should be subjected to the accident of four successive degenerated placenta with the attendant risk is not fair to her. On the other hand, if she persists in her wish for a family, I believe that possibly one or two thorough curettages would result in a normal placenta. I believe the disease originates in the endometrium. The question of sterilization rests with the patient.

DR. ALFRED HEINEBERG.—Just what part of the tube is resected, Dr. Applegate did not mention. In attempting to sterilize these patients without removal of the ovaries we should bear in mind that no operation on the tubes has been successful in every instance. The method which is apparently the least reliable in bringing about tubal sterilization is that of resection of the tubes and ligation of the cut ends. In some instances the end of the cut tube has been imbedded in the broad ligament, in some introduced into the wall of the uterus. The method which seems to meet the approval of most men and which has been carried out in the largest number of cases by Häberlin, is a cuneiform resection of the cornu of the uterus, followed by careful coaptation of the cut edges of the muscle of the uterine wall and suturing the peritoneum over that. In Häberlin's series of forty-one cases there was one failure, the woman subsequently becoming pregnant. Therefore I think that if we are going to promise to the woman success in our attempt at sterilization we ought to consider only this one method. All other methods have yielded a larger percentage of failures.

DR. APPLEGATE, closing.—My method of sterilization has been practically that described by Dr. Heineberg. The tube is grasped in the center with tissue forceps; it is ligated in two places and both ends thoroughly cauterized with pure carbolic acid. I realize that the tube may become patulous, open up and pregnancy occur, but it has never happened in any of my cases, a number of whom were sterilized in conjunction with Cesarean section as long as ten and

twelve years ago. I do not believe pregnancy possible if both ends are ligated and thoroughly cauterized with pure carbolic acid. Dilatation and curetment were performed on this patient together with swabbing of the uterine cavity with tincture of iodine but seemed to be of no value. While it is true that a negative Wassermann test is not necessarily proof that syphilis does not exist, yet in watching these people for four or five years I have not seen evidence of syphilis in either the patient or her husband. Besides, the pathologist's report shows that syphilis was not present in this case; furthermore, the placenta from a syphilitic patient is always large, about one-quarter the body weight of the fetus, water-soaked and edematous. I am quite sure that the specimen is not the result of syphilitic infection.

DR. EDWARD A. SCHUMANN read a paper on

THE MODIFICATION OF THE TECHNIC OF CESAREAN SECTION WITH  
HYSTERECTOMY.\*

DISCUSSION.

DR. B. F. BAER.—The method described by Dr. Schumann takes us back to the old days of treating the cervix outside the abdominal cavity. It seems to me that there is no reason why it should be treated externally unless it is infected. I think the Doctor especially spoke of the noninfection of the cervix. The extraperitoneal treatment of the stump seems unusual to those of us who have been dropping the stump for many years after hysterectomy.

DR. F. HURST MAIER.—It does not seem to me like going back to treat the cervical stump extraperitoneally. We have, however, in a certain proportion of our prolapse cases come back to this method and Dr. Schumann has authority for so doing. The method appears to me as a very safe one. The practice of cauterization is very important in closing the lymphatics, thus preventing infection from the lateral parts of the uterus.

DR. JOHN A. MCGINN.—To my mind this operation is a great improvement on the so-called extraperitoneal Cesarean operation. I can understand that in the typical extraperitoneal Cesarean section in cases in which the peritoneal cavity is not opened that infected material can be drained without infecting the peritoneal cavity. In doing the Hirst operation, however, we protect the cavity better than by packing with gauze. The idea of preventing infection by any of these methods is foolish to my mind. If infection occurs it is because you have infected the uterus. The majority of uterine infections are wound infections. If the uterus is infected it should be taken out, or, if there is great probability that it is. Dependence should not be placed upon extraperitoneal Cesarean section, the results of which will not compare favorably with the classical operation.

\* For original article see page 297.

DR. SCHUMANN, closing.—I am sorry that I did not make myself clear to Dr. Baer and to Dr. Maier. The type of case which I meant to describe was that of the frankly infected uterus before the Cesarean section is done. I know of no operator in Philadelphia who dares to drop the cervical stump in such frankly infected case. To avoid the area of granulation which results in the other methods of extraperitoneal treatment of stumps, I close the abdominal incision before opening the uterus and so shut off a large avenue of possible soiling of the peritoneum and amputate the uterus with the cautery.

DR. STEPHEN E. TRACY reported a case of

#### ELUSIVE FIBROMYOMA OF THE UTERUS.

This case was of unusual interest to me as I had not had a similar experience, nor do I recall a description of such a condition in an extensive review of the literature of fibromyomata uteri. The history of the case was as follows:

Miss S., virgin, aged thirty-five, school teacher, had suffered with menorrhagia over two years. Examination per vaginam with one finger, revealed what felt like a fibroid nodule the size of a walnut, projecting through the external os. A diagnosis was made of a submucous fibroid and its removal recommended.

The patient reported at the hospital a few days later and was prepared for operation. A general anesthetic was given and after the operative area had been disinfected the usual bimanual examination was made, in this case to determine if nodules were present in other parts of the uterus. Much to my surprise, there was no tumor in the vagina and the cervical canal would not admit the top of a finger. No nodules were detected and the uterus was about normal size. As the patient was the sister of a physician, I was anything but pleased with my preliminary diagnosis and evidently showed it, as he inquired the cause of my discomfiture.

The cervical canal was then well dilated and after considerable effort the tumor was captured and delivered. The pedicle, which was short and elastic, and attached to the right side of the uterus above the internal os, was severed.

It would seem that the condition could be explained about as follows:

Under the general anesthesia the uterus relaxed, the pedicle which was under tension drew the tumor into the endometrial cavity and the cervical canal closed down after the tumor.

I trust this brief report may be of comfort to others under similar circumstances. It shows that one should not become perturbed too quickly.



*Meeting of December 6, 1917.*

*The President, DR. FRANK C. HAMMOND, in the Chair.*

DR. E. B. CRAGIN, of New York, by invitation, read a paper entitled

## THE FUNCTIONS OF A WOMAN'S HOSPITAL IN A LARGE CITY.\*

## DISCUSSION.

DR. BARTON COOKE HIRST.—Dr. Cragin's paper is like a breath of fresh air in the rather murky atmosphere surrounding us here. He advocates and elucidates principles with his usual lucidity and force that I have been contending for during a quarter of a century, principles acknowledged to be correct and already put into practice in many progressive medical centers of this country, which are now in accord with the practice of the civilized world.

Unfortunately we have not shown the same progressive spirit in this matter that might have been expected of one of the oldest centers of medical education in the country. We still maintain that anachronism, special departments for diseases of women, in our medical schools and some of our hospitals and even worse, in some institutions, compel women seeking hospital treatment for conditions peculiar to their sex, to accept the services of a general surgeon without special knowledge or experience of these conditions and necessarily inferior to his colleagues who have devoted their whole time and attention to them.

The explanation of this state of affairs is I fear, a somewhat sordid one. It cannot be defended on the ground that it is beneficial to the patient—quite the contrary. It cannot be contended that it conduces to the progress of medicine—again, quite the contrary.

Take the successor to the type of gynecologist common in the last generation. How can he claim to be an accomplished expert in the treatment of the ills of womankind when his knowledge and experience are confined to a part only of the conditions peculiar to the sex. As a matter of fact, he is not and cannot be such an expert.

Of all the patients claiming a gynecologist's attention, 60 per cent. at least have lacerations of the genital canal or retroversion of the uterus. How can these conditions be understood by one who knows nothing of the original injuries and has no knowledge of the effect of his procedure upon subsequent parturitions. The general surgeon is even worse. His plastic surgery is usually ludicrous and often other pelvic conditions go not only unrelieved but actually unrecognized. The only explanation I can see for the effort to perpetuate on the one hand, the too general work of the general surgeon and on the other, the too narrow specialism of the so-called gynecologist, is the disinclination on the part of the advocates of this system to relinquish a lucrative clientèle.

\* For original article see page 353.

For years I have maintained in this community a true woman's clinic where all the conditions peculiar to her sex are studied, treated and demonstrated in close correlation. In this manner only can the greatest justice be done the patient; in this way only lies hope of future progress in gynecology. To this opinion all will come in time. I for one feel deeply grateful to Dr. Cragin for his powerful advocacy of the only true solution of this question and for the added impetus that his paper will give to this movement.

DR. E. E. MONTGOMERY.—Dr. Cragin has demonstrated what can, may and should be done in the line of work which he has followed. Such an institution as he has here portrayed cannot but be of the greatest value to the community in which he lives, to the profession at large, not only in the city of New York, but the country over.

I must confess, however, that it seems to me that a man can be useful in the profession if he devote himself especially to the one subject of gynecology. I have come up through the general practice, through an obstetric experience, and finally to the consummation of work, that of gynecology. The experience gained in general medicine and in obstetrics as a preliminary to the practice of a specialty such as that of gynecology, is invaluable. When we look back to the work of Emmet, Washington L. Atlee, Goodell and others whom we could name, who finally limited their work almost exclusively to gynecology, we realize how very much their work has aided that of the internist and the surgeon. Through this specialization the whole profession has gained in knowledge in the various departments of medicine. When I began to teach gynecology and to limit my work to that branch I was asked why I did not combine obstetrics with it. I said that the principal part of gynecology was repairing the work of the obstetrician; consequently, I felt that it was better to repair the mistakes of others than to have to consider my own as well. The study, however, and the knowledge of obstetrics are of great value in the diagnosis of many conditions coming under the observation of the gynecologist. Only a few days ago a patient came under my notice in the wards of the Jefferson Hospital who had been sent in to one of my assistants and this case I was asked to see. The woman had been confined a month before, giving birth to twins. There was a tumor on one side of the abdomen with quite marked bulging. The condition was looked upon as having developed after pregnancy and as apparently a septic infection involving the tube on that side. Upon examination, however, I was convinced that there was present an ovarian cyst. There was elevation of temperature indicating a septic course. My belief was that in labor the cyst had undergone a certain amount of injury and that a suppurating condition was present. At operation the cyst was turned out and found to be filled with pus. The removal of the tumor led to an entire subsidence of the septic symptoms.

I can appreciate, of course, that an experience of the study of obstetrics in the Philadelphia Hospital in the time I became an interne in that institution, and when we went from the surgical department where we had erysipelas and septic cases in large num-

ber, to the obstetrical department without any special preparation and found the transfer attended with the development of large numbers of cases of septic infection, that if one were inclined to consider the work he was doing he would realize the association of such conditions. This was the time when the work of Fordyce Barker on puerperal fever had just come out and to one who had had such an experience as this it was a revelation. In that institution as a member of the visiting staff one had an opportunity of seeing the great variety of cases of infection which developed from the want of proper methods of treatment, methods, of course, which have been revolutionized in later days by the experience thus gained. Such a field as this emphasizes the importance of the subject presented to us by Dr. Cragin of having some place in which men can be thoroughly educated upon all sides of the subject and thus be prepared to do the work that they should do and to protect the interests of those who come under consideration. I join in hearty appreciation of Dr. Cragin's presentation of this subject.

DR. J. M. BALDY.—There are a number of points of very great interest; a number also in which the benefits are so self-evident that comment is unnecessary. These are in connection with the benefit to the child and to the mother in such an institution depicted by our guest this evening. There is also great advantage to the physicians themselves in the training in various methods of procedure. There were several points not emphasized as much as I should like to have heard them. The condition of affairs in New York, whereby this type of work is combined in certain hospitals and sections of the city, is unique. This idea has been strongly controverted in our own community by equally eminent obstetricians. The State Board of Medical Licensure insisted that all hospitals of the State should open obstetrical departments, having in mind very much this same idea which Dr. Cragin tells us is being carried out in New York. It seems to me that the educational feature ought to be more dwelt upon in the development of the whole scheme. In this and neighboring cities we find that the hospitals are incompletely manned so far as this type of work is concerned, the work being done very imperfectly, not only by the older men but by the young men who are undertaught, badly taught and not imbued with the importance of the subject and with the interest they should take in the handling of these clinics when opportunity is given them to take charge of them. In some hospitals in New Jersey the development of this idea of combined work is discouraged. This is much the attitude of the men being sent out from our schools to-day, and you, gentlemen, are responsible for this condition. Criticism comes with ill grace from the obstetrician who, when he does have the opportunity to combine all features of Obstetrics and Gynecology will not stop at the pelvis, but for the same sort of reasons operates throughout the abdomen.

One of the greatest benefits which an institution of this kind can bring, and I think one of the greatest functions aside from the primary one of the safety of the mother and child, is the education



of the coming generation of doctors, the internes and assistants in these clinics. These men are young and are readily molded by those in charge of such hospital. Therein lies the hope of the competent surgeon as outlined by Dr. Cragin. But in such a combination of hospitals if you do not have the proper personnel you will not have desired results. I would much rather have women go for operation into a hospital of the Sloane type than into many of the hospitals with which I am acquainted.

One other subject is to be considered. Dr. Hirst mentioned it; that of the general surgeon. If any man needs education the general surgeon needs it in this class of work. When Dr. Cragin says he is not exactly the proper man to handle pelvic work, you might think he is speaking from the pulpit—so mild is his manner. I know of no general surgeon who is a competent plastic surgeon. I have been at the operating table of many general surgeons of the highest type and I have been astonished at the lack of knowledge displayed of plastic and pelvic surgery. How can you expect the general surgeon to know anything about gynecological surgery if he is not keen to witness the work of the men who know how to do it. One of the greatest advantages of an institution such as outlined by Dr. Cragin is the continued education of men who know how to do this class of work and who will keep such patients out of the hands of the general surgeon.

DR. RICHARD C. NORRIS.—The essentially important idea in Dr. Cragin's paper is the social service element of it. If there is any force to bring home to the general profession, to boards of trustees, to people who are intimately associated with hospital work and to the public generally that this plea for coöperative obstetrics and gynecology is important, it is the social service work of a hospital. I agree with him *in toto* that the Social Service Department is to be one of the powerful levers to change medical opinion to-day, and I will go further and predict that it also will change my opinion. The very work which Dr. Baldy has been doing, the very fact that general hospitals are required now to have an obstetrical department means sooner or later that their social service work must have a gynecological department in the hospital and that the men who are to be put in charge of that work will not be general surgeons but will be men trained in obstetrics and gynecology. From the standpoint of teaching there is no question that the combination of obstetrics and gynecology is absolutely essential to-day. Time was when it was necessary to have men devoted especially to gynecology. It was a pioneer branch of surgery, but the types of gynecological surgery referred to to-night are fixed; the man who knows them is an accomplished gynecologist. I think the time will come when the expert in abdominal work will be the professor of abdominal surgery and that pelvic and birth-canal surgery which are cognate with obstetrics, will be left with the gynecologist and obstetrician. I believe we shall see that position maintained. In my own experience in an obstetric hospital and a gynecological service the need of this combination is demonstrated. At the Preston Retreat which



was endowed for obstetrics and not gynecology, even before the development of the social service work, there were many patients leaving the institution to whom I used to give cards to the gynecological dispensary of my service at other hospitals. At the Methodist Hospital where we have both obstetrical and gynecological service, and an active Social Service Department, we see how the two specialties are brought into closer and closer relationship. Many of our cases in the gynecological service come to us through our obstetric department. Dr. Baldy is right in saying that men must be trained to this. The first place to train is in the teaching institution and if it is essential to begin anywhere to combine obstetrics and gynecology it must be in the teaching institution. With that accomplished we shall have men qualified and eager to do both classes of work as a distinct specialty which will become more and more useful and therefore recognized as necessary by the public.

DR. GEORGE M. BOYD.—The social service work as shown in his paper is a very important element in this work, and if there ever has been a time in the history of the world when we should save life, it is now. The paper brings home to us all very forcefully the necessity of prenatal work and care of the patient during parturition and after delivery. It seems to me that the question of disassociating the gynecologist and the obstetrician is hardly debatable; one can hardly conceive of a man being a gynecologist without having an obstetric experience; on the other hand, one could scarcely be an obstetrician without having gynecological skill. This is the essential element in Dr. Cragin's paper and a point which we should take greatly to heart. It is one which emphasizes the necessity of doing thorough and careful work in the anticipation and correction of complications attending labor and parturition.

DR. CRAGIN, closing.—I always feel in coming to Philadelphia that I am coming to my friends and I heartily appreciate the criticism of friends. I might have known that Dr. Hirst would have views somewhat in accord with mine. Many a time we have talked this matter over together, many a time compared ideals, many a time have wished that each might have a complete woman's hospital and it is now no longer a secret among my friends that Dr. Hirst was largely instrumental in enabling me to get what we both wanted. No one can have followed the honored life of Dr. Montgomery without knowing how useful can be a life devoted to gynecology. Fifteen years ago I thought my life was to be devoted solely to this specialty; I had almost ceased to do obstetrics, save in doctors' families, courtesy obstetrics, I called it, and I expected gradually to be excused from that; but, the powers that be ordained otherwise and I was offered the Chair of Obstetrics at Columbia University. This has given me an opportunity in the last six years of seeing what it meant to have the two branches combined in one institution and under the same head. I admit that a man finds it onerous to do a large private gynecological practice and a large private obstetrical practice at the same time, unless he has a hospital with a large number of private rooms. The way I have had to solve the problem

for myself has been that within the last year I have given up private obstetric work outside of the hospital. This means that the man occupying the responsibility of the combined chair can have his work outside of his office limited to his hospital. In that way he has more time for teaching and at the same time he can do his private work, and I believe that the study of the two together and the teaching of the two together work for the interest of medical education.

The point which I want to emphasize here to-night, with the hope that Philadelphia may fall into line, is that this work is based largely upon Social Service development. We do not expect to pool the work of the different hospitals in New York, for the lions and the lambs do not usually lie down and live happily together, unless you renew the lambs very frequently. We cannot expect all of our hospitals in New York to always work along exactly the same lines and with the same ideals. The work we have been trying to do in New York in the last month, along the lines which I have been suggesting to you, is in its infancy. To tell the exact truth, we have had it in operation at the Sloane Hospital only since last Saturday, but we have all agreed to try it, stimulated by the Board of Health of New York, stimulated by the Milk Commission and the Women's City Club. We have agreed to try out, not a combination of work, but a limitation of the district in which we would do our obstetric work. The reason this has appealed to us at the Sloane Hospital is that 59th Street on which the Sloane Hospital is situated for the last five years has been largely the center of a colored population; many of this colored population have moved from 59th Street up to a section between 130th and 145th Streets. We always liked those colored people; they make excellent material as patients and for teaching purposes; they give us our rachitic pelves and show what a colored woman can do with a colored baby in getting it through a colored woman's birth canal. We have enjoyed our colored patients and they in turn have apparently enjoyed us, and they have wanted to come back down to 59th Street. The lay people of New York, such as I have indicated in these different organizations, have been stirring us up to do better Social Service work, establishing maternity centers in different parts of the city so that they could give this prenatal instruction and that our Social Service workers could instruct these people before and after labor. Now we found that we could not properly care for those colored women away up in 140th Street as we could when they were located on 59th Street, and that they would not come down to the Sloane Hospital as often as they should in order to be properly cared for. We felt that we could do better work if we had them in a limited district; therefore the maternity hospitals agreed to try this limitation of their obstetric work so that the Social Service work could be better done. We will each do our individual characteristic work with our individual characteristic instruction to students. We do believe that the sum total of our work and the sum total of the care of these women will be infinitely

improved if it can be condensed and be made intensive work in a small district rather than spread out all over the city. This is the object of the presentation of my paper to-night. I believe the plan is feasible in Philadelphia also. If tried thoroughly as we intend to do I believe that at the end of the year we shall find the project has worked well.

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## BRIEF OF CURRENT LITERATURE.

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### GYNECOLOGY AND ABDOMINAL SURGERY.

**Results of Radium Treatment of Cancer.**—As a result of the use of radium in the treatment of 642 cases of cancer and allied conditions at the Collis P. Huntington Memorial Hospital, from September, 1913, to January, 1916, the following conclusions are among those drawn by the Cancer Commission of Harvard University and reported by W. Duane and R. B. Greenough (*Bost. Med. and Surg. Jour.*, 1917, clxxvii, 359). Many cases of advanced, inoperable or recurrent cancer may be given benefit by treatment with radium. In such cases the relief may include one or more of the following advantages: Relief of pain, diminution of discharge, rendering discharges less offensive, relief of hemorrhage, diminution in the size of tumor masses, even to their total disappearance; and the improvement in the general condition of the patient. To these must be added the undoubtedly beneficial psychic effect upon the patient. In a very small number of advanced and apparently inoperable cases, improvement may occur such as to permit a radical operation to be performed. Among the conditions in which radium treatment has proved of special value may be mentioned: recurrent or inoperable carcinoma of the cervix, or of the body of the uterus.

Radium therapy has proved, so far, to be of little benefit in recurrent carcinoma of the breast. The use of radium in prophylaxis of recurrence after radical operation, for the cure of cancer, is not advised. When serious doubt exists as to the complete removal of the primary tumor, and where the location of the suspicious area is superficial and accessible, and of small extent, radium may be used with benefit, but where a large area is to be considered, as after operation for breast cancer, the difficulties of covering the whole area with sufficient radiation are such that the treatment is not to be recommended. Although many cases of advanced carcinoma show no appreciable benefit from radium treatment, it is also true that in no case yet observed has radium appeared actually to accelerate the growth of tumor tissue. Patients have suffered pain and inconvenience from the effects of radium burns in certain instances, but these have been of a temporary character. The constitutional effects of heavy doses of radium are unpleasant, and severe nausea and depression may occur; but these, also, are chiefly temporary in character. With continued and excessive dosage, very profound consti-



tutional effects may be obtained. A serious diminution in the number of white cells in the blood is observed after continued heavy dosage. This is a more lasting phenomenon, and may be of serious importance in relation to the patient's resistance to infection. In no other respect was radium found to exert an unfavorable action upon the patient.

**Anatomic Substitute for the Female Breast.**—W. Barttell (*Annals Surg.*, 1917, lvi, 208) emphasizes the psychic importance of the breast to the female patient and the consequent value of conserving the breast form after removal of the gland. This he has done in six cases by shelling out the entire gland with an extremely hot cautery through a crescentic incision below the breast. By burning toward the gland instead of the skin the latter is preserved intact. After securing perfect hemostasis a mass of fat 50 per cent. larger than the extirpated gland is removed from the anterior abdominal wall, outer aspect of the thigh, or the buttocks and stuffed into the breast cavity, thus allowing for inevitable shrinkage. The breast wound is closed in two layers, superficial fascia and skin, without drainage which might lead to infection.

**Septic Peritonitis: Treatment by Cecostomy.**—In treating septic peritonitis, it is to be borne in mind that a virulent toxin in the paralyzed bowels is rapidly killing the patient, and that there is only one certain method of removing this toxin, namely, by opening the intestines and draining them—always provided that before doing so the septic focus is eliminated, the abdominal cavity cleansed of excessive poison by swabbing, douching, and efficient drainage of septic necrotic areas, and further, that purgatives, saline injections, and eserine or similar drugs have been given a fair trial. A. J. Nyulasy's (*Brit. Jour. Surg.*, 1917, v, 53) preference is for cecostomy. If cecostomy does not soon relieve, drainage of the bowel higher up should be instituted.

**Study of the Complete Isolation of the Pelvis.**—Chaput discusses extensively an operation devised by himself in 1894 (*Annales de gynécologie et d'obstétrique*, July–August, 1917) to wit, the isolation of the pelvic from the abdominal cavity. This may be total or partial. The former consists in marsupialization to the pelvic wall, after having freed the pelvis of epiploon and loops of intestine, with filiform abdominovaginal or abdominorectal drainage. The operation consists essentially in fixation of the sigmoid colon to the superior strait and suprapubic peritoneum. There are several varieties of operation. It may be done in connection with panhysterectomy or with conservation of the uterus and adnexa and is also indicated at times in the male. The actual indications are as follows: when a hemostatic tamponade is required; when a salpingectomy has left hard, infected fibrous patches on the pelvic walls; in very septic affections of the lesser pelvis; when the general state is very defective; when cancerous masses have been left in the pelvis; in traumatic lesions of the pelvis when complicated with infection or gangrene; in irreparable or poorly repaired wounds of the hollow organs of the lesser pelvis. Total isolation transforms



the pelvis into an unilocular cavity with smooth walls, broadly exposed to the air. Pelvic infection is with difficulty propagated to the abdomen because of the thickness and high situation of this colonic partition. Abdomino-vaginal lavage becomes possible.

**Gynecological Exploration.**—Madame Sosnowska (*La Presse Médicale*, August 30) after a conventional outline of what she terms the ritual methods of exploration of the internal genitals, gives a résumé of the technic of Brandt, the Swedish gynecologist who combines exploration with manipulations. Several sessions are required before the diagnosis is finally made. Otherwise stated, during the first séance the gross diagnosis is made; and after several sessions of examination and manipulation full diagnosis becomes apparent. The initial exploration is made with patient standing, one hand holding up her skirts while the other rests upon the doctor's shoulder. She then reclines on a special table with pelvis resting upon her closed hands to relax the abdomen. The latter is the only region actually uncovered during the exploration. In the standing posture the rectovaginal examination is practised with the index-finger in the rectum and thumb in the vagina. The vaginal examination with one hand is made with the left index-finger as the right hand holds back the clothing. For the bimanual vaginal exploration the right hand is used on the abdomen. For exploration of the abdominal wall the fingers of both hands are used to pinch up the latter in all directions and in all localities, in this way parietal cellulitis is recognized. The examination is completed by bimanual palpation and percussion of the abdominal viscera.

**Posture in Cases of Abdominal Disease.**—R. Hill (*Annals Surg.*, 1917, lvi, 414) says that there are three definitely recognized positions used in treating cases which require abdominal drainage, and each seeks to secure to the utmost the influence of gravity. These are: First, the Fowler position. Second, the prone position, or what is known as ventral decubitus. Third, the lateral position, where the patient is placed on the side. The Fowler position, the one most commonly employed throughout the country, has a number of disadvantages. It is necessary to raise the patient so that the long axis of the abdominal cavity is at an angle of 60–70 degrees on the horizon, before the spaces in front of the kidneys will drain into the pelvis. This position tends to throw a decided strain upon a patient with an already weakened heart and lowered blood pressure. Furthermore this position favors gastric distention and in the Fowler position the pelvis is lower than the pelvic arch and the escape of pus takes place by siphonage. In a series of 15 cases treated in the lateral position, there was no mortality. In 42 treated in the abdominal position there were but two deaths. Of 47 cases in which the Fowler position was employed, five died. From the fact that there were only two deaths out of 57 cases treated in the prone position and on the side, infers that the posture in which the patients were placed contributed materially to their recovery.

## ITEM

REPORTING OF ACCIDENTS FROM LOCAL  
ANESTHETICS

*To the Editor.*—The Committee on Therapeutic Research of the Council on Pharmacy and Chemistry of the American Medical Association has undertaken a study of the accidents following the clinical use of local anesthetics, especially those following ordinary therapeutic doses. It is hoped that this study may lead to a better understanding of the cause of such accidents, and consequently to methods of avoiding them, or, at least, of treating them successfully when they occur.

It is becoming apparent that several of the local anesthetics, if not all of those in general use, are prone to cause death or symptoms of severe poisoning in a small percentage of those cases in which the dose used has been hitherto considered quite safe.

The infrequent occurrence of these accidents and their production by relatively small doses point to a peculiar hypersensitiveness on the part of those in whom the accidents occur. The data necessary for a study of these accidents are at present wholly insufficient, especially since the symptoms described in most of the cases are quite different from those commonly observed in animals even after the administration of toxic, but not fatal, doses.

Such accidents are seldom reported in detail in the medical literature, partly because physicians and dentists fear that they may be held to blame should they report them, partly, perhaps, because they have failed to appreciate the importance of the matter from the standpoint of the protection of the public.

It is evident that a broader view should prevail, and that physicians should be informed regarding the conditions under which such accidents occur in order that they may be avoided. It is also evident that the best protection against such unjust accusations, and the best means of preventing such accidents consist in the publication of careful detailed records when they have occurred, with the attending circumstances. These should be reported in the medical or dental journals when possible; but when, for any reason, this seems undesirable, a confidential report may be filed with Dr. R. A. Hatcher, 414 East Twenty-Sixth Street, New York City, who has been appointed by the Committee to collect this information.

If desired, such reports will be considered strictly confidential so far as the name of the patient and that of the medical attendant are concerned and such information will be used solely as a means of studying the problem of toxicity of this class of agents, unless permission is given to use the name.

All available facts, both public and private, should be included in these reports, but the following data are especially to be desired in those cases in which more detailed reports cannot be made:

The age, sex, and general history of the patient should be given in as great detail as possible. The state of the nervous system appears to be of especial importance. The dosage employed should be stated as accurately as possible; also the concentration of the solution employed, the site of the injection (whether intramuscular, perineural or strictly subcutaneous), and whether applied to the mouth, nose, or other part of the body. The possibility of an injection having been made into a small vein during intramuscular injection or into the gums should be considered. In such cases the action begins almost at once, that is, within a few seconds.

The previous condition of the heart and respiration should be reported if possible; and, of course, the effects of the drug on the heart and respiration, as well as the duration of the symptoms, should be recorded. If antidotes are employed, their nature and dosage should be stated, together with the character and time of appearance of the effects induced by the antidotes. It is important to state whether antidotes were administered orally, or by subcutaneous, intramuscular or intravenous injection, and the concentration in which such antidotes were used.

While such detailed information, together with any other available data, are desirable, it is not to be understood that the inability to supply such details should prevent the publication of reports of poisoning, however meager the data, so long as accuracy is observed.

The committee urges on all anesthetists, surgeons, physicians and dentists the making of such reports as a public duty; it asks that they read this appeal with especial attention to the character of observations desired.

TORALD SOLLMANN, *Chairman*,  
R. A. HATCHER, *Special Referee*,  
Therapeutic Research Committee of the  
Council on Pharmacy and Chemistry  
of the American Medical Association.

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## ERRATA

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February, 1918, issue, page 297, footnote should read, *Meeting of November 1, 1917.*

# DEPARTMENT OF PEDIATRICS.

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## ORIGINAL COMMUNICATIONS.

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### TRANSACTIONS OF THE ANNUAL MEETING OF THE AMERICAN ASSOCIATION FOR STUDY AND PREVENTION OF INFANT MORTALITY, 1917.

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#### DISEASE CONDITIONS IN OLDER BABIES THAT CAN BE ATTRIBUTED TO PRENATAL INFLUENCES.\*

BY

ROWLAND G. FREEMAN, M. D.,

New York City.

THERE exist in older children many conditions of maldevelopment, the causes of which are unknown and the treatment unsatisfactory. That these conditions depend upon something preceding the birth of the child is evident. The cause of the defects we do not know but their etiology should be thoroughly investigated, bearing in mind prenatal influences which might be etiological factors. Many of these conditions were previously thought to be of tuberculous or specific origin, but with our better facilities for diagnosis such factors may be discarded and we are forced to look for other causative agents.

In this group of cases we may place the achondroplasias, cases of Mongolian idiocy, of microcephalic idiocy, delayed development, feeble-mindedness, the different types of dwarfs, epilepsy and possibly cerebral palsy. Cretinism is a condition the lesion of which we know, but of the cause we know little except that there is a hereditary tendency to it in certain families.

To be sure there are cases in the above classes which may be attributed to premature birth, to difficult or long labor, or to other mechanical causes, but having eliminated all these there still remain a large majority for which we have previously had no sufficient cause.

I think it is a fact that these defects are rarer in families with high moral ideals and good physical condition of the parents, than in those of the neurotic and feeble; that they are much rarer in nonalcoholic families than in those which are more or less alcoholic.

\* Read at meeting of American Association for the Study and Prevention of Infant Mortality, at Richmond, Virginia, October 15, 1917.



Congenital defects are certainly more common in our institutions which receive the progeny of the lowest class of our cities than in private practice among the more self-respecting people, so that I believe vice and alcohol play a large part in the defects of the offspring.

There are, however, other possible factors. Consanguinity of parents has been thought to be a cause of defects in the offspring but the thorough investigations of Alfred Henry Huth showed the entire lack of evidence that this was in any way a factor excepting as it perpetuates and emphasizes any defects or weaknesses in the families in which this inbreeding occurs.

Heredity is the source of many of these defects especially in such conditions as cretinism, congenital family idiocy, epilepsy, etc.

Illegitimacy is again a factor, for the children of such a union have at least one weak and often one vicious and diseased parent, and from such a union healthy children should rarely be expected.

The influence of alcoholism of the parent has been scientifically studied and the literature on the subject has been collected by Dr. Charles R. Stockard(1), Professor of Anatomy in the Cornell University Medical School, from whose articles I shall quote freely.

Our evidences consist first of observations in man and also experimental work on animals. I will quote first some of the observations in man and reports of autopsies in man, reviewing briefly the experimental work afterward.

It seems well established that alcoholism of one or both parents increases the number of stillbirths, and the number of defective offspring. Of the female offspring that live and marry, very few (2.6 per cent.) are said to be able to nurse their babies(2).

That alcoholism affects the mortality of the offspring seems evident from the following statistics of Dr. Jacquet(3), member of the Conseil d'Hygiene and de Salubrité of the Department of the Seine in France. He collected statistics of the infant mortality among families of moderate drinkers, of decided drinkers, and of very decided drinkers.

The 305 children of 141 families of moderate drinkers showed a mortality of 18.78 per cent.

The 248 children of 108 families of decided drinkers showed a mortality of 26 per cent.

The 326 children of 147 families of very decided drinkers showed a mortality of 55.47 per cent.

Sullivan(4), who made an important study in an English prison, found that of 600 children born to 120 women of marked alcoholic

habit, 335 or 56 per cent. were stillborn or died within the first two years. Of 138 children of twenty-eight relatives of these women where both husband and wife were sober, only 24 per cent. died during the first two years.

Moreover, in these alcoholic families the mortality is least in the first born and increases with the later children, thus in the first born the average of eighty cases was 6.2, while in ninety-three cases of the sixth to the tenth child of the family the mortality was 17.27 per cent. Of seven cases of drunkenness during conception six children died in convulsions after a few months and the seventh was stillborn.

Schweigehoper reported an interesting case of a normal woman who married a sober man and had three sound children. The husband died and she married a drunkard and had three children by him. Of these one had infantilism, two became drunkards and tuberculous. By a third husband this woman again had normal children.

Martin of the Salpatriere in Paris investigated 83 epileptic girls and found that 60 had alcoholic parents while in the other 23 alcoholism was doubtful or absent.

There is much more evidence of this same sort and little to the contrary. Scientific investigation in the laboratory furnishes corroborative evidence.

Nicloux and Renault(5) have shown that alcohol has an affinity for the sexual organs. He found that in the testicle the amount in proportion to that in the blood was as two to three, while in the ovary in proportion to the blood it was as two to five. Moreover, Bertholet has observed partial atrophy of the testes in the majority of seventy-five chronic alcoholics; also an atrophy of the ovary and ova in female alcoholics.

Experiments on different sorts of lower animals have been made by several observers, on dogs, rabbits, guinea-pigs, and chickens. The most elaborate and conclusive of these are reported by Stockard. He subjected the animals to inhalations of alcohol and found that he could affect the offspring by alcoholizing either the male or female, but the most marked results were obtained when both were exposed.

1. In 95 matings of an alcoholic male and normal female 38 gave no result or early abortion; 10 gave stillbirth litters; 47 gave litters of 91 pigs of which 39 died soon after birth. Thus the total result of the 95 matings was 52 guinea-pigs.

2. In 43 matings of a normal male and alcoholic female 11 gave no result or early abortion; 7 had stillbirth litters; 25 had living

litters of 52 guinea-pigs, of which 26 died soon after birth. Thus the total result of 43 matings was 26 guinea-pigs.

3. In 42 matings of alcoholic males with alcoholic females 20 gave no result or very early abortion; 4 had stillborn litters; 18 had living litters of 27 guinea-pigs of which 12 died soon after birth. Thus the total result of 42 matings was 15 guinea-pigs.

In contrast with these findings 123 control matings gave 26 negative results or early abortions; 2 stillborn litters, and 178 living guinea-pigs, of which 24 died soon after birth.

Thus the end result from 123 matings was 154 guinea-pigs.

Stockard finds that the surviving young of alcoholic parents are often defective, subject to convulsions and develop poorly.

Perhaps the most interesting of Stockard's findings is in the ultimate result on the progeny of these guinea-pigs for several generations. All the handicaps transmitted to the first generation of pigs by alcoholic parents continue to be transmitted to offspring for several generations, although none of the descendants of the original pigs are alcoholic.

Recent work by Raymond Pearl in alcoholizing chickens, while corresponding in some respects to that of Stockard, leads him to somewhat different conclusions.

This work of Stockard and other laboratory workers and the observations quoted from clinicians would lead us to believe that cases of retarded development in older children, nervous and irritable conditions, epilepsy, and the various forms of infantilism and idiocy, are in many cases the result of alcoholism in one or both of the parents before conception or possibly of alcoholism in the grandparents or great grandparents.

211 WEST FIFTY-SEVENTH STREET.

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HOW THE PEDIATRICIAN AND OBSTETRICIAN  
CAN COÖPERATE.\*

BY

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INFANT welfare begins with conception and during the whole of gestation, prenatal care is so closely linked with maternal welfare that it is wholly the obstetrician's problem. Nevertheless he cannot solve these questions alone for there are immediate and remote effects of intrauterine life which are only discovered by the pediatricist after the baby has passed from the care of the obstetrician, so he is unable independently to form his ideas of prenatal care without the coöperation of the pediatrician.

On the other hand, the children's specialist cannot give the infant his best care without the knowledge of the mother that the obstetrician can give him as to her pregnancy, labor and general condition of health. And in the puerperium, where both have an active part, the closest coöperation is necessary.

Even in this day of increasing specialization the interdependence of the various branches of medicine is clearly recognized.

The specialist by the very fact of his superior capabilities in his own line is not satisfied with his limited knowledge when a problem in another field confronts him and he at once feels the need of counsel with one as well trained in that branch as he is in his own. This is peculiarly true when specialists meet upon the common ground of public service.

In those specialties which are sharply demarked this need is felt to some extent, but in those branches, between which the dividing line is drawn with difficulty there is a sort of no man's land which may be claimed by both; a twilight zone, as it were, in which the branches of medicine on either side may clash or coöperate.

So representatives of pediatrics and obstetrics meet to-day to discuss questions of common interest, to dissipate the twilight with the bright sun of mutual understanding and to coöperate and not to clash.

We meet on the common ground of infant welfare.

\* Presented at the Eighth Annual Meeting of the American Association for Study and Prevention of Infant Mortality, Richmond, Virginia, October 15-17, 1917



The duty of the obstetrician is twofold, for he is responsible not only for the successful piloting of the mother through a sea beset with dangers to her, but he is, so far as our present knowledge will permit, to be held accountable for ushering a healthy baby into the world so that the pediatricist may begin with a normal child instead of a weakling. Obstetricians have been too prone to look upon the management of pregnancy as "antepartum care," *i.e.*, referring only to the mother, but the propaganda for infant welfare has brought more clearly before us "prenatal care" or the welfare of the fetus.

In general terms a healthy mother usually means a healthy child and the care which is taken to keep the mother in good physical condition will do the same for the child, but if we are content with this general fact we shall fall short in our entire duty to the baby.

Much must yet be learned about the effects upon the fetus of certain measures taken for the mother's welfare such as diet, medication, etc., in other words, a burden of research is laid upon us obstetricians to learn more about the growth, development and metabolism of the fetus and the effects of certain diet, diseases and physical conditions of the mother upon her new-born child.

These are difficult problems but if we are to do our whole duty in this work and deliver to the pediatricist a healthy normal baby we must not only follow the well-established principles of prenatal care but we must endeavor to improve upon them by investigation.

We have not met with the best of success in impressing upon the laity the absolute necessity of careful supervision of the pregnant woman for her own sake and I fear that it is not even sufficiently fixed in the minds of the profession, but the added stimulus of anxiety for the baby may help us, for women will often follow measures for their babies which they neglect for themselves.

It is not my purpose to reiterate the details of prenatal care which have been so thoroughly discussed by this Society, but I do wish to emphasize a fact which cannot be too often repeated, namely that it is not sufficient to examine the urine and take the blood pressure and measure the pelvis of a pregnant woman, but if we are really to succeed in our part of this problem, it means painstaking investigations into every detail of the mother's health, and further, study of influences which may affect the child *in utero*.

This is primarily the obstetrician's problem for it is, of course, obvious that maternal and fetal care cannot be divorced; however, the pediatricist can render very valuable aid.

It is equally clear that after the puerperium the problem is one

almost entirely for the pediatrician, but he too can do better work if the obstetrician coöperates.

Unfortunately, there is an hiatus between "prenatal care" and "infant welfare," viz., the puerperium, during which the obstetrician usually has charge of the baby.

The best interest of the new-born baby cannot be conserved if the obstetrician and pediatrician work independently, however well one may do his own work; there must be a coördination of the two agencies which shall leave no gap.

The pediatrician and his infant welfare workers should know in advance of every approaching confinement and should have a record of all necessary data before parturition so that they can go on where the obstetrician and his prenatal workers leave off without waiting for the baby to be taken sick through disease or improper feeding.

I take it that we all believe that prophylaxis is the greatest watchword in infant welfare, therefore the pediatrician should be notified as soon as the baby is born so that by proper instruction and care the baby may be kept healthy or disease detected at the earliest possible moment.

This may be done by coöperation between obstetrics and pediatrics or through a central agency where the complete data of pregnancy and parturition are accessible; a maternal and baby center where the data of pregnancy, parturition and infant care are accessible to both.

It goes without saying that the pediatrician starts with much better prospects of success if he has the help of the obstetrician's records.

But there is still a better way of coöperating.

You will note that I have advocated that the pediatricist be immediately notified of every birth so that he may begin where the obstetrician leaves off. I have suggested this not that he may hold himself in readiness for any emergency that may arise as to the welfare of the baby, but I propose that the pediatricist take immediate and full charge of the infant from birth.

I believe the pediatrician should control the new-born clinic both in the maternity hospitals and outpatient or district service.

While I realize that this is somewhat revolutionary, I am convinced that it is more logical than the present method of obstetric control of the new-born.

My reason for advocating this change when it was made in the University of Minnesota hospitals, were set forth in a paper read before the American Association of Teachers of Pediatrics at Detroit

in 1916, in which I argued that every teaching hospital to successfully live up to the best ideals should fulfil three fundamental requirements. Inasmuch as these requisites apply equally well to all charitable medical work, whether done under teaching conditions or not, I shall with your permission repeat some of these arguments in my advocacy of the proposition that the best way to do away with the hiatus between "prenatal care" and "infant welfare" is to turn the care of the new-born over to the pediatrician immediately after birth.

But why should we break away from our time honored custom of the obstetrician caring for the new-born?

Such an innovation should only be made if it will insure better care of the baby, stimulate increased research and, if the work be in connection with a medical school, insure better clinical teaching.

I think we will have no difficulty in convincing the pediatrician that he can take better care of the new-born than the obstetrician, he already admits it, but the obstetrician, because he always has had this responsibility, may find it hard to admit that the baby is only a by-product of obstetrics.

The pediatricist by special training, methods of study and habits of thought is better fitted to attack the problems of the new-born than is the obstetrician. By personal inclination and bent of mind the pediatricist's interest is in the baby and the obstetrician's is in the woman. The pediatrician has by training, desires and experience, shaped his mind to think in terms of the infant and the obstetrician in terms of the woman.

Pediatrics is essentially a medical and obstetrics a surgical subject.

It is not to be expected, indeed it would be quite exceptional for an obstetrician and gynecologist, to be also expert in the care of the new-born. And now when there is a tendency toward specializing, even within the specialties, the field is too large for one man to attempt. As a matter of fact the obstetrician is not particularly interested in the baby as a problem in medicine; of course he wants the infant to get along well and will do all he can to further that end but in the last analysis he is not and cannot be expected to become a well-trained obstetrician and gynecologist and an expert pediatricist as well. The care of the new-born is neglected in most maternities, not because the obstetrician wilfully ignores the baby, but because his habits of thought, training and desires lead his mind in another direction.

On the other hand the pediatrician by all his instincts is intensely interested in the problems of the new-born and attacks them with

enthusiasm and avidity, and the net result will be a better cared for baby and a larger number of problems solved.

If the comparatively young specialty of pediatrics has succeeded in establishing itself as a distinct branch of medicine, as is now admitted by most internists, it should not be difficult to convince obstetricians that there is a "new-born pediatrics," which has much less in common with obstetrics than pediatrics in general has with internal medicine.

In the University of Minnesota Hospital the baby is entered as a pediatric patient as soon as born, and after more than three year's trial we find that experience has confirmed our theories and not the least enthusiastic advocate of the plan is the Professor of Obstetrics.

We admit that the babies are better cared for and many problems peculiar to the new-born are being studied which we would not have had the time or inclination to undertake.

We are glad that we can contribute the material for the pediatricist to study, which, if done in all maternities, would hasten the development of the comparatively new science of "new-born" pediatrics, that covers a field that we obstetricians must admit has been greatly neglected.

It is not sufficient that the pediatrician be made a consultant on the staff of the maternity, but he should be given full charge and authority.

I thoroughly believed, when we made this change, that the pediatricist would take better care of the baby, would be a better teacher and the results of his research would be greater, and I am glad to say that experience has proven this to be true.

But there are compensations to the obstetrician which more than repay him for all he has given up.

By releasing the time usually given to the baby he can concentrate on the problems of the woman; he will be a better teacher and he will have more time for productive investigation in a field in which he is better trained, enjoys more and for which his mind is better fitted by habits of thought.

Furthermore, the present neglect of the new-born in general practice will not prevail when our students are graduated with better training in pediatrics of the new-born.

Thus we see that the benefit of this change, revolutionary as it may seem, is threefold:

*First*.—Increased efficiency of the pediatricist, who will grow by his



experience with the new-born, resulting in better cared for babies and increased investigation.

*Second.*—Better trained obstetricians by eliminating time spent in work more or less foreign to this specialty, and

*Third.*—Better equipped general practitioners due to the increased efficiency of both departments.

I know of nothing in addition to prenatal care, which obstetricians can do toward the advancement of infant welfare that will accomplish as much as turning over the care of the new-born infant to the pediatrician at the earliest possible moment.

In as much as I have tried chiefly to discover and point out the part that the obstetrician can play in this plan of coöperation, I have said very little about the pediatrician, but he can do much to help us by reporting back any condition which may be attributed to errors of prenatal care of obstetric management.

The interdependence of these specialties in working for infant welfare is so apparent and the membership of this Society has shown such a keen desire or coöperation that I fear I have been able only to point out methods already familiar to you, but the cause is so worthy that perhaps repetition will do no harm.

In brief then the obstetrician's duty in this coöperation is to give the best possible prenatal care, to turn over to the pediatrician all data that can be of any assistance in the care of the baby and to consider the baby a pediatric patient as soon as born.

The pediatrician's part is to report back to the obstetrician any information which will help in solving the many problems of prenatal life. Whenever possible these records should be kept by a central agency for the benefit of both pediatrics and obstetrics.

Coöperation, which means to work together, has never, I think, been better put than in the expression "one for all and all for one." This could very well be our slogan for infant welfare.

## WHAT THE PEDIATRICIAN CAN DO TO REDUCE THE MORTALITY IN THE FIRST MONTH OF LIFE.\*

BY

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THE Philadelphia meeting of this Association in 1915 clearly showed the work that was being done by the obstetrician, by the teacher of obstetrics and the visiting nurse. When I perused the papers that were read and the discussion that followed them, I felt instinctively that the time was approaching rapidly when the pediatrician also would be called upon to increase his endeavors in his line of work. Everybody appreciates the fact, that the pediatrician is conscientiously striving to fulfill what is expected of him. Everybody knows that he has been the most important factor in reducing infant mortality to a degree that could hardly have been hoped for, but the one point that is ever present is that the mortality during the first month of life was not diminished in the same proportion. The mortality during the first month of life is still by far too high, and so it is imperative that at this meeting and especially at this time of stress and distress this Association should endeavor to find the cause for this deplorable condition and after having gone to the root of it, discuss the necessary means to overcome it.

The topic that was assigned to me is "what the pediatrician can do to reduce the infant mortality during the first month of life." But is the pediatrician only a practising physician, only a teacher in his specialty? Most assuredly he is first and foremost a member of the body politic, a member of the community, a citizen of the country, and as such it is his duty to exert all the influence that is at his command in the interest of the welfare of his community and in a larger sense of his country.

We who are assembled here recognize the truth of the statement that the mortality in infancy and especially during the first few weeks of life, increases in inverse proportion to the earning power of the head of the family. It is not necessary at this time to

\* Presented at the session on Pediatrics, Eighth Annual Meeting of the American Association for Study and Prevention of Infant Mortality, Richmond, Virginia, October 15-17, 1917.

recall the investigations at Montclair and Johnstown with their conclusive evidence. But it is not sufficient that we who are conversant with the investigations that were carried on in these and many other localities, do feel convinced that the public at large or even the members of our profession appreciate the utter seriousness of the conditions brought to light by these investigations. Do the mothers of this country who are living in luxury or even in moderate circumstances imagine that such frightful situations exist, that such occurrences really take place right before their eyes? We know that a mother who during pregnancy is used up by long hours and strenuous work, is rarely able to bring a viable child into the world, but are her well-to-do neighbors apprised of this fact? The public at large must be made to know what we have realized so long, that the pediatrician together with the obstetrician, visiting nurse and social service worker, must make it his solemn duty to spread the gospel that in every line of employment, to have the right to exist, the worker must be paid a sufficient wage to insure him a decent living and the chance to raise a healthy family. This is not a question between classes, it is a question that touches the core of our body politic. It will not do to merely gloss over this sore spot in our civilization; the situation is economically extravagant and morally inexcusable; we must assist with all the influence at our command, in trying to reach the goal where the fruits of the industries are more equally distributed, where a living wage is paid to the worker.

The entrance of this country into the war has not changed the problem. It has not been shelved by the higher wages paid to labor, it has become more pressing from day to day, since the increase in wages has not kept step with the increase in the price of everything necessary to supply the family. And so economic demands have forced and are forcing to-day many expectant mothers to assist with the fruit of their manual labor in the support of the household. We must also reckon with the inborn greed of the human race, that draws many a mother into the factory, lured there by the growing demand for labor and higher wages paid.

For this reason we must work to arouse the necessary sentiment and together with the rightminded approach our State governments, approach the legislative bodies at Washington and prove to our representatives, that the time has come for a more complete protection of motherhood and infancy. Europe has shown us the way. Our legislatures should at their earliest convenience pass laws to forbid or restrict work in the later weeks of pregnancy, to pay a

subsidy during this time or even give a monetary reward to the mother who is willing to take full care of her offspring and feed it on the breast.

We who come in daily contact with the working classes, who appreciate the hardships worked by our more or less imperfect economic system, we should feel it as our specific duty as citizens as well as pediatricians to lead the van on the road to progress together with the obstetrician and visiting nurse, social worker and all thinking citizens.

While the war is not affecting us in the same degree as Europe, mostly single men having thus far been called to the colors, still the prospect of the losses in human life that will surely be ours, should spur us on to effect a change in our economic household that will give us positive results in combatting mortality in the first month of life. This is the only way in which we can help a large number of newborn babies to their undeniable right to be born strong and healthy.

The pediatrician as a practising physician has even to a lesser degree felt the influence of the war. It is the same old problem, the problem of education, the education of the laity. Infant welfare stations, mother's conferences, baby shows, etc., have been very effective in spreading knowledge, but those physicians and nurses who are actively engaged in this work know only too well how large the number of babies is who from the beginning have been deprived of their natural food, breast milk, on account of ignorance, or on account of the lack of appreciation of what cow's milk feeding means to the newborn. We must not forget to mention the splendid work done by the prenatal clinics with their most valuable educational features. But only the lower strata of the population take advantage of this opportunity, the large middle class is treated as a veritable step-child, when it comes to this, as to really every other vastly important branch in medicine. A change must be wrought here, the so long neglected middle class must be reached. Again it is propaganda work that is needed. No member of the community knows better how to do efficient work, to get better results than the practising pediatrician. All the ways and means at our command to reach the people should be used, all the influences we possess should be exerted on our officials. Moving pictures, pamphlets, newspapers and public lectures are the weapons in fighting the more or less good natured ignorance of the general public and the penuriousness of our officials. If the manufacturers of patent medicine find it to their advantage to go to the Bureau of Vital Statistics and then



flood the young mothers with alluring books and beautiful pictures of the babies raised on their respective foods, why cannot the community as such grasp their opportunity and counteract the influence of the commercial advertiser by a well conceived plan of action. A concise, well written manual on how to take care of mother and baby before and after birth sent to every mother in the community would surely be a most potent factor in the education of our masses.

What the midwife question is to the obstetrician, the patent food question is to the pediatrician. Intestinal disorders cause still the largest number of deaths in viable infants during the first months of life, and respiratory disturbances are not easy to prevent since they are more or less dependent on the environment and resisting powers, not so much on lack of knowledge. Training has practically eliminated trismus neonatorum and general sepsis has become a *rara avis* in our practice. Melena neonatorum is one of the few, almost invariably fatal conditions of early infancy and to overcome the high percentage of loss in this disease the pediatrician together with the obstetrician should induce the Health Departments of their respective cities to increase their armamentarium by keeping continuously on hand a sufficient quantity of citrated blood to be delivered gratis to the physician who is in need of it for this purpose.

One more phase of this question of how to reduce mortality in the first month of life must be considered and that is the relation of the physician who is in attendance to the woman and the new-born child, and this brings us to the third point of our discussion. I mean what the pediatrician as a teacher of pediatrics can or should do to reduce infant mortality during the first months of life.

At the 1915 meeting of this Association the conditions in the obstetric field were discussed in their widest ramifications. We listened to remarks like this: Both the teaching and practice of obstetrics are generally regarded as the poorest of all the clinical branches of medicine, but what shall the pediatrician say when the same busy, poorly paid and poorly trained men who attend the greatest majority of all confinement cases also carry the responsibility to administer to the new-born. We all realize how badly this poor infant fares. The attention of the physician is centered on the woman and he relegates the baby to the charge possibly of an untrained nurse or incompetent neighbor. From the very day of its birth the infant is dosed with laxatives. The unnecessary fear of starving the child brings into evidence the first supplementary bottle. Digestive disturbances appearing in very early life are immediately put to the door of the mother. Not a month passes

without meeting a large number of babies that have been taken off the breast on medical advice for just such reasons. We see infants in the first month of life afflicted with pyloric stenosis or pylorospasm brought to our consulting rooms that within the few weeks of their life have run the gamut of all patent foods, dying not from their congenital disease, but from the digestive disturbance caused by the wrong feeding.

We who have been connected with the teaching end of the profession for a longer term of years recognize, of course, the enormous advances made. We know that the young men who leave our medical colleges to-day are infinitely better equipped than those of only a few years ago. At the same time practical medical work of the community is not done by the young men fresh from school or hospital, but by those doctors who received their medical training in pediatrics at a time when a short term of clinical lectures was thought sufficient for this branch of medicine and when bedside instruction in children's diseases was not resorted to. The handbooks on children's diseases are too voluminous and too expensive for the practitioner, the question of infant feeding is handled in such a manner that makes it appear too intricate except to minds mathematically inclined.

The consequences of this state of affairs are felt by us all. Most assuredly the larger cities are in a better shape to handle the situation, but what about the smaller communities and the rural districts. This is the place where our hard work must be done to further decrease infant mortality and especially that of the first month of life.

Post-graduate schools are very valuable institutions for the dissemination of knowledge, but their attendance is as yet too limited to make any impression on the medical fraternity at large. Too much valuable time is lost in waiting for the practising physician to come to the seat of learning, and for that reason, we the teachers in pediatrics must make it our object to visit the county medical societies and there sow the seeds of a propaganda that is bound to bring to us valuable returns. Our national government knows how to get results. It sends a specialist through the farming districts to instruct the farmers how to produce better crops and to raise better live stock. So far we have no department of health in Washington, no Secretary of Health and Sanitation, and as long as this state of affairs is not changed, it falls to the lot of our universities to fulfill their function as leaders of the people. Circulars and pamphlets may be valuable adjuncts, but it is imperative that

the members of their teaching staffs should come in personal contact with the profession at large. No program of any state medical society should be considered complete, without one or more papers on this so extremely important but much neglected subject. If possible the respective State Medical Associations should be induced to hold their annual meetings with more frequency in the large cities of their States, and in that way acquaint their members with these institutions that have shown themselves so valuable in combating infant mortality.

Speaking of the spreading of wider knowledge among the profession at large should not make us forget to make better use of these self-same agencies in the teaching of our undergraduates. The attendance at the prenatal clinic as well as at the feeding stations should be made obligatory, so that the gospel of how to take care of infants should be carried all over the country in the most effective way.

And so we say in conclusion, that the question of how to reduce the mortality during the first month of life has not changed its character on account of our entry into the war, but resolves itself into a question of education, an education that can be materially fostered by the pediatrician in his capacity as a citizen, as a practising physician and as a teacher in pediatrics.

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## REVIEW OF REPORTS ON WAR WORK IN ENGLAND, FRANCE AND GERMANY WITH SPECIAL REFER- ENCE TO THE CARE OF WOMEN DURING PREGNANCY AND LABOR.\*

BY

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MATERNAL and child welfare work has come to assume more and more importance since the beginning of the great war with its huge destruction of human life. In England, France and Germany work along these lines was well under way before the outbreak of hostilities but since that time these activities have been markedly increased. It is interesting to note that the schemes initiated or extended in the various countries have been similar in direction and scope. Another resulting feature is the decreased importance of the work by voluntary associations, in contrast with the assumption

\*Read at Eighth Annual Meeting of the American Association for Study and Prevention of Infant Mortality, Richmond, October 15-17, 1917.

by the State of increased responsibility for the life and health of its civil population. The most extensive papers available at the present time concerning the activities under discussion are the Reports(1) of Sir Arthur Newsholme, the Medical Officer of the Local Government Board of England and Wales, and the Reports(2) of the Carnegie United Kingdom Trust, published in the present year. These deal with conditions in England, Ireland, Scotland and Wales, and will be discussed first.

July 30, 1914(3) (4), the Local Government Board for England and Wales issued circulars in regard to regulations under which grants would be made by it. These circulars were sent to county councils and sanitary authorities asking that they undertake infant and maternal welfare work and offering to pay 50 per cent. of the cost of such work. Under certain circumstances it was willing to subsidize in the same way the work of voluntary agencies. The memorandum and official circular stated that a complete scheme would comprise the following elements.

(1) Arrangements for the local supervision of midwives.

(2) Arrangements for

Antenatal	{	(a) antenatal clinics for expectant mothers;
		(b) home visiting of expectant mothers;
		(c) maternity hospitals for complicated cases of pregnancy.

(3) Arrangements for

Natal...	{	(a) skilled assistance during confinement;
		(b) confinement, if necessary, in a hospital.

(4) Arrangements for

Postnatal	{	(a) treatment in hospital of complications after parturition;
		(b) systematic advice at infant clinic;
		(c) provision of clinics for young children;
		(d) systematic visitation of homes of infants and young children.

Similar grants(3) (4) were offered by the Local Government Board in 1915 and 1916 in communications sent throughout the land which said "The Board takes this opportunity of impressing on local authorities the importance of securing full provision for the maternity and child welfare in their districts, in spite of the need for economy in other directions at the present time." The services authorized were:

1. Salaries and expenses of inspectors of midwives.
2. Salaries and expenses of health visitors and nurses engaged in maternity and child welfare work.
3. The provision of a midwife for necessitous women in confine-



ment and for districts which are not sufficiently supplied with midwives.

4. The provision of a doctor for the aid in confinement of necessitous women.

5. The expenses of a maternity center, *i.e.*, an institution providing any or all of the following activities, *viz.*: medical supervision and advice for expectant and nursing mothers and for infants and little children, and medical treatment at the center for ailments incident to pregnancy.

6. Hospital treatment provided or contracted for by a local authority for complicated cases of confinement or complications arising after parturition, either in the mother or infant, and for infants found to need hospital treatment.

The answers to questionnaires sent out recently in order to determine to what extent local authorities had responded to this appeal of the government show the following:

In the majority of districts there is some child welfare work being done, but in many no prenatal work as yet. Where there is prenatal work it is usually carried on by a voluntary agency and not by the local sanitary authority. A number of districts report that plans for a maternity center such as has been described, are under way. From 50 to 75 per cent. of the women are delivered by midwives and one-third to one-half of these midwives are untrained.

The Board of Education of England(5) has undertaken to establish schools for mothers throughout the land. Like the Local Government Board it limits its grants to one-half of the expenses of the institutions. Their main object is the prevention of sickness and ill health among infants and little children by means of the education and training of the mother. This end is accomplished by(6)

1. Infant consultations.
2. Home visits to see that the instruction given is put into practice.
3. Instruction by suitable class work (health talks, sewing classes, mothercraft, hygiene).

In 1907 the "Notification of Births Act" was passed for the whole of Great Britain. It required that the medical officers of health be informed in writing within thirty-six hours of the birth of a child. In 1915, when the increased necessity for the protection of infant and maternal life was causing the establishment of many new welfare undertakings, this act was extended so that under its provision local committees were formed in each district, these committees to include women among their members, and to provide in any way which they saw fit for the care of expectant and nursing mothers

and infants. Large funds were put at their disposal for this purpose.

The discussion so far has concerned England and Wales only. The remainder will deal with activities in France and Germany, as well as Great Britain.

A matter of vital importance is the provision made in the various countries which are at war for the delivery of women with special reference to the midwifery problem, as it presents itself in different lands(7).

A "Midwives Act" was passed in 1902 for England and Wales. Since the outbreak of the war a similar act has been passed for Scotland. This act required originally that a prospective midwife have three months' training in a recognized hospital. Since 1916, the time required has been increased to six months. She must attend twenty cases, receive instruction in anatomy, physiology, hygiene, the management of labor, the care of the child at and after birth, and the recognition of complications or diseases connected with pregnancy. She must then pass an examination before the Central Midwives Board before she receives her certificate. A midwife who could prove that she had been in practice for a year before this Act went into effect was exempt from its provisions. The Committee on the Midwives Act(8), reporting in 1909, estimated that taking the country as a whole, the midwife was the only attendant in 50 per cent. of the births. Sir Arthur Newsholme, in his recently published report on Maternity and Child Welfare states that on March 31, 1916, there were "40,513 women on the Midwives Roll, of whom 30,543 were trained and certificated 9970 untrained but certified in accordance with the Midwives Act of 1902 as having been in a *bona fide* practice at the date fixed by the Act. The number of midwives who gave notice of their intention to practice in 1915 was, however, only 12,087, of whom 6754 or 55.8 per cent. were trained and 5333 or 44.2 per cent. untrained. . . . The reason why more trained midwives do not practise is said to be the increasing difficulty of making a living out of the practice of midwifery. In many urban and in most rural areas the practice of midwifery is now subsidized by hospitals, maternity charities and nursing associations, and in places where such a subsidy is not available there is often a shortage of trained midwives."

As was said before, Scotland has obtained an act similar to the Midwives Act of 1902, since the outbreak of the war.

In Ireland conditions are very different. The Medical Charities Act (1851)(9) established a dispensary system for the country with the right to free medical advice and medicines for all the sick poor.

The Poor Relief Act (1862) provided for relief of all poor persons in workhouse hospitals, including the right to services of a midwife or doctor in confinement. The country is divided into 740 dispensary districts attended by 810 medical officers and 751 trained midwives. Some districts are thickly populated and have several midwives. In fifty districts there are no midwives. Many women who cannot afford a private doctor's fee are too proud to call in the dispensary doctor or midwife. This has led to the employment of the "handy-woman" who presides at such a large proportion of Irish labors. She is any neighbor who will come in for a mere trifle and who has no knowledge of obstetrics or asepis. As a rule, she is excessively ignorant and frequently dirty.

In France midwives used to be designated as first and second class respectively(7). In August, 1916, the second class midwives were abolished. Candidates for a certificate must now pass a preliminary examination and then undergo a two years' course of training. After they receive their certificate they are under no supervision. On the whole they are of much higher grade than the midwives of any other country. In Paris 95 per cent. of the women who have been confined since the outbreak of the war have been obliged to seek public aid for delivery. This does not necessarily mean that the delivery was conducted by a midwife.

In Germany the midwife's training varies in different States. In some it is very good, in others very poor(7). In all, however, she must use an official text-book which is uniform all over the country. Midwives are frequently appointed to certain districts by the government. They must pass examinations and then be supervised. In Saxony where the standard is highest, continuation courses for midwives are compulsory. Ninety per cent. of the women in Germany are delivered by midwives.

In England, France and Germany maternity benefits have recently been established(10). In 1911 and 1913 the National Insurance Acts were passed in England. As they exist at present, a woman can, under certain conditions claim two maternity benefits of thirty shillings each. The second benefit is payable only when she abstains from employment outside the home for wages for a period of four weeks following her delivery. One clause of the Act places a penalty upon whomever employs a woman in factory or workshop during this period, and another makes her husband liable to imprisonment if he fails to make provision for her maintenance during the time. Still another provision of the Act enables her to secure a sick benefit at any time during pregnancy if incapacity exists

even though she suffers from no disease or other bodily disablement.

In France(10)(11) there has been a government maternity grant since 1913 to women working for wages outside their homes. Since the war this benefit has been extended to all French women drawing separation allowance and to all refugees receiving special government aid. This allowance of from 10 to 25 cents a day extends over a period of eight weeks, with an extra daily allowance of 10 cents daily after confinement to those mothers who nurse the child.

In France it is not only the employment of women during the weeks following delivery which is a matter for concern. The prohibition(12) of all pregnant and nursing women from work in munitions factories is under consideration. There is a division of opinion as to the need for such a radical step. In March, 1917(13), following numerous discussions of the subject a number of resolutions were drawn up by the French Academy of Medicine including the following recommendations:

1. Pregnant and nursing women employed in factories to be subjected to tasks requiring only moderate effort.
2. Compulsory rest for four weeks preceding confinement for women workers in munitions factories.
3. Consultations with physicians on maternal and infant hygiene, regulation of labor according to individual need, a female supervisor to deal directly with the women in place of the superintendent.
4. Measures to enable women to nurse their infants while at work and premiums to those who do so.
5. Indemnity paid from the government to those women who because of pregnancy are partly or entirely incapacitated for work.
6. Retiring rooms in which mothers can nurse their infants, and children's playrooms.

In Germany(14) maternity benefits were first granted under the Imperial Insurance Code of 1911. Three times since the beginning of the war these grants have been extended. They are paid to the wives of men performing military, medical or similar service in the war for the empire, or men who are prevented therefrom or from again pursuing a wage-earning occupation by death, injury, capture or imprisonment. The benefits consists of:

1. A contribution of \$5.95 to the expenses of confinement.
2. An additional grant of 24 cents a day for eight weeks, six of which must be after confinement.
3. A contribution of \$2.38 paid prior to confinement for midwife or doctor.



4. Premiums of 12 cents a day until the twelfth week after confinement to mothers who nurse their babies.

One of the subjects connected with welfare work which has recently been agitated in England is that of venereal disease. In 1916(15) regulations were made by the Local Government Board on this subject. Since syphilis is the most common cause of the birth of premature and stillborn infants these regulations are of interest in connection with the present discussion of prenatal care though they were not made entirely in behalf of future generations. They provide for the free diagnosis and treatment of all cases of venereal disease. Each sanitary authority is asked to make arrangements with local hospitals for pathological, bacteriological and serological examinations, clinical conferences, administration of drugs and hospital treatment for patients when necessary. The central government agrees to pay 75 per cent. of the cost of such work.

Another aspect of prenatal care, which, however, has been more emphasized in France than in England, is the furnishing of meals to pregnant and nursing women at little or no expense. In both countries the work is carried on by voluntary agencies, there being no government grants available for the purpose. The most extensive schemes exist in Paris but work along this line is now being organized in other cities of France. The Canteines Maternelles supply two free meals a day to every woman within five months of her confinement and to every nursing mother until her child is fourteen months old. This work was begun in 1905(16). Since then the number of canteens has been greatly increased, the number of free meals distributed to pregnant and nursing women being three times as great in 1915 as it was the preceding year. Once a week during the lunch hour a consultation for mothers and an infant clinic is held(17).

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## REDUCTION OF INFANT MORTALITY DUE TO PRENATAL AND OBSTETRICAL CONDITIONS.\*

BY

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A questionnaire was addressed to health departments, state and municipal, and asked for information in regard to measures being taken under public auspices, for the reduction of maternal and infant mortality due to prenatal and obstetrical conditions.

Only twenty-three of forty-eight states and one hundred and thirty-seven of six hundred and forty-eight cities circularized, were interested enough or had time to answer. This is sufficient proof of the lack of interest of state and municipal authorities regarding this situation.

### RESULT OF TABULATED STATEMENTS.

The summarized activities of the twenty-three states which answered are as follows:

\* Read at the Section on Obstetrics, American Association for Study and Prevention of Infant Mortality, Richmond, Va., October 15, 1917.

	Prena- tal clinics	Ob- stetr. clinics	Prena- tal nurses	Ob- stetr. nurses	Dist. of Ins. lit.	Talks to moth- ers	Inspection of mid- wives	Other activi- ties	Extension of present activities
No.....	2	3	2	2	10	7	1	8	5
% of total...	8.7	13.0	8.7	8.7	43.5	30.4	4.3	34.7	21.7

Whether or not answers for the other twenty-five states would improve the percentage of activities is problematical, but I take it that states which are not interested enough to answer this questionnaire are not particularly interested in, or doing much to prevent this form of infant mortality.

The summarized activities of the one hundred and thirty-seven cities which answered are as follows:

	Prena- tal clinics	Ob- stetr. clinics	Prena- tal nurses	Ob- stetr. nurses	Dist. of Ins. lit.	Talks to moth- ers	Inspection of mid- wives	Other activi- ties	Extension of present activities
No.....	26	18	37	36	59	51	40	37	23
% of total...	19.0	13.1	27.0	26.3	43.1	37.3	29.2	27.0	16.8

By comparing the percentage activity, it is seen that in some branches municipal health authorities show more activity than state health officers. By percentage the city and state authorities have instituted the following activities in the following ratio:

Prenatal Clinics 19.0 (City); 8.7 (State); Obst. Clinics 13.1 (City); 13.0 (State).

Prenatal Nurses 27.0 (City) 8.7 (State); Obst. Nurses 26.3 (City); 8.7 (State). Distribution of literature 43.1 (City); 43.5 (State); Talks to Mothers 37.3 (City); 30.4 (State); Inspection of Midwives 29.2 (City); 4.3 (State); Other Activities 27.0 (City); 34.7 (State).

Along two lines only do these activities approach equal ratios namely, the institution of obstetrical clinics and the distribution of instructive literature.

Four of the forty-eight states, 17.3 per cent have a budget for this purpose, which ranges from \$900 in Kentucky to \$11,200 in Virginia, while twenty-six of the cities, 19 per cent., have one, some of them meagre, and others like that of Philadelphia \$74,835, an appropriation ample to obtain results.

#### COMMENT.

The study of the course of infant mortality can be roughly divided into two distinct phases.

(a) Prenatal causes.

(b) Postnatal causes.

The second phase (b) (postnatal causes) has received considerable study and we now have sufficient knowledge of these causes and methods of prevention to perform effectual work with sufficient interested help. The object of this questionnaire was to ascertain what was being done to prevent deaths from prenatal causes, and it is this point where we pass from the postnatal to the prenatal that might be termed the point of departure in so far as we have accurate knowledge of facts and I can see reason for the apparent lack of interest by sanitarians.

As a matter of fact, study and investigation of this phase has been very meagre, too few facts are known, and at this time the attitude of sanitarians differ, some feeling that prenatal causes are as important as postnatal causes in determining infant mortality, other receiving whatever discussion they hear without active interest, while the majority give the subject very little attention.

It will be necessary to obtain a scientific basis for work before establishing an effective organization for the relief of prenatal infant mortality. This no doubt must be sought in a field, which for obvious reasons is a difficult one from which to obtain correct data. There is, however, one method which appears promising, *i.e.*, the intensive study and rational statistical treatment of stillbirths. Karl Pearson in this essay on "The Chances of Death," estimated that for every 1000 live-born children there were 605 stillborn, and Dr. Franklin P. Mall, Director of the Carnegie Laboratory of Embryology, in an interview with the author stated that it was his belief that the incidence of stillbirths is at least one-half of the total number of live births. That these estimates can be reconciled to facts with which all sanitarians should be acquainted, one only has to project the infant mortality incidence into the prenatal period. It might be of interest to you to know that of 58,089 deaths under one month in the registration area in 1910, 25,672 or 61.40 per cent. were attributed to antenatal causes. It is axiomatic that the course of the mortality curve from the first to the thirtieth day of life is determined almost entirely by prenatal causes. It is my opinion that if this information serves its proper purpose, it will be to establish an axiom for every one interested in the reduction of infant mortality, namely that, "The conservation of infant life must begin at the period of conception." Any departure from this fundamental principle will necessitate a sacrifice.

Proper treatment of such data and material can only take place



through the recognition by sanitarians of the importance of this field of work, and the opportunity which they have before them. The first step, therefore, is the establishment and adoption of a definition of a stillborn child by all the boards of health, a matter which has been discussed principally in relation to registration and entirely independent of its most interesting phases, namely its reflection in the birth-rate, infant mortality rate and its association with the causes of sterility. In the tabulated statement of the answers from the twenty-eight states, only three states made an effort to receive reports of all stillbirths, Maryland, Michigan and West Virginia. The remainder only require reports for those children which have attained four to seven months' utero-gestation. It is useless to discuss the numerous methods of evading reports by the unscrupulous under such a law, or its evident fallacies from a scientific point of view.

Appropriations definitely designated to this purpose by state or municipal governments are the exception. The cause for this is evident, for except in a few instances, such as the prevention of eclampsia or Cesarean section in contracted pelvis, etc., sanitarians can present no concrete facts for argument, nor do they possess any statistical statements which could be proof of the necessity of funds for further investigation. It has been my experience that, as a rule, public funds are not appropriated through sentiment but through necessity.

I have no doubt that whatever is expended at present to reduce infant mortality due to prenatal and obstetrical conditions is productive of good, but I fear it is concentrated about a few well-known facts, and I am certain that the very best return for the funds and energy spent will not be attained until further investigation reveals the more subtle influences which underly this great waste of life, and to this end, it behooves this Association to lend its aid wherever possible, to the establishment of statistical and scientific methods for the investigation of this problem.

## REVIEW OF WISCONSIN "EUGENICS LEGISLATION."\*

BY

MICHAEL F. GUYER, PH. D.,

Madison, Wisconsin.

MUCH of the so-called eugenic legislation in Wisconsin would be more accurately classed under the caption of sex hygiene, since it consists of health measures aimed more immediately at the prevention of venereal disease in the present generation than toward the preservation of the hereditarily desirable. But even such measures must be indirectly of eugenical significance, either positively or negatively, since they are concerned with diseases which have direct bearings on death-rates and birth-rates. Sterilization by gonorrhea modifies birth-rates no less certainly than destruction by war, and syphilis is probably as responsible for the extinction of family lines as is voluntary limitation of offspring. On the other hand, as regards the law for the sterilization of certain undesirable classes, the purpose is directly eugenical.

The enactment which has attracted most attention and brought forth most comment both within and without Wisconsin is probably the one commonly termed "the eugenic law relating to marriage." It is in reality a health measure intended to prevent the transmission of venereal disease through the marriage relation. Passed hurriedly during the closing days of the legislative session of 1913, insufficient attention was given the wording of the provision and it became a source of much confusion and acrimonious discussion. The unusual publicity incident to the debate, however, resulted in a very wide education of citizens regarding the nature and the purpose of the act.

The original statute (Section 2339, m of the Statutes, 1913) provided in its first section that, "All male persons making application for license to marry shall at any time within fifteen days prior to such application, be examined as to the existence or non-existence in such person of any venereal disease, and it shall be unlawful for the county clerk of any county to issue a license to marry to any person who fails to present and file with such county clerk a certificate

\* Read at American Association for Study and Prevention of Infant Mortality, Eighth Annual Meeting, Richmond, Va., Oct. 15-17, 1917. Session on Eugenics.

setting forth that such person is free from acquired venereal diseases so nearly as can be determined by physical examination and by the application of the recognized clinical and laboratory tests of scientific search."

One of the controversies which immediately arose was as to whether the law, in specifying "the application of the recognized clinical and laboratory tests of scientific search," required a Wassermann test for syphilis. If so, then it was demanding an examination that only a few physicians in the State could make, and even these could not do it for the fee of \$3 specified in section 2. The law also made it compulsory for the official county or city physicians of the State to examine, free of charge, indigents who desired to marry. After much agitation the question finally reached the attorney-general of the State. He rendered an opinion which read in part as follows:

"If there are clinical and laboratory tests, such as the Wassermann test, which require special study and special apparatus for their application, and which only a very small per cent. of the licensed physicians of scientific attainments can apply, I am convinced that the law was not intended to require and therefore does not require such tests. I do believe that the law was enacted on the assumption that physicians, more than any other class of citizens, would appreciate the wisdom and necessity therefor and would coöperate to the best of their ability in its enforcement. The purpose was not to provide a new source of revenue for the doctors; nor, on the other hand, was there an intent to place an undue burden on them. No doubt reliance was placed on the well-known public spirit of the medical profession and the fee fixed at a figure which would cause hardship neither to the applicant nor to the examiner. It is, of course, apparent that physicians can be found who will issue the required certificates no matter what tests the law may be deemed to require, so that, unless the reputable physicians will coöperate to make the law effective (and if they will not, no law of the kind can be successful) the law must largely fail to accomplish any good. But I am convinced that the great mass of reputable physicians will desire to save the law and the profession from disrepute, and will therefore endeavor to carry out the spirit of the enactment and hold themselves ready to give such examinations and tests as the ordinary reputable physician of scientific attainments is equipped to make and may reasonably be expected to make for the fee prescribed. Otherwise it is plain that the charlatan of the profession will seize on this law as a new source of revenue and thus bring the law into disrepute and bring dishonor to their profession. I am of the opinion that the law must be given a practicable and workable construction, rather than one that will defeat its purpose and possibly render it unconstitutional and void; that its obvious purpose was to require only such an examination and test as the ordinary reputable licensed physician of scientific attainments is equipped to make is capable of making, and could reasonably be expected to make for the fee of \$3, and that the 'recognized clinical and laboratory tests of scientific search' do not include the so-called Wassermann tests, nor such tests as can be made

only by specialists, nor such as require special and expensive equipment or long laboratory experiments."

Although many of the physicians of the State accepted the interpretation of the attorney-general and examined candidates for marriage accordingly, the majority of the physicians refused to do so. The latter felt themselves all the more justified when in a test case in Milwaukee the circuit judge ruled that the law was unconstitutional on the ground that it placed an undue and unreasonable restraint upon the solemnization of marriages. It was not until the supreme court of the State had declared the law constitutional that most of the medical men capitulated. Even then a minority of physicians kept up an active opposition.

In 1915 an attempt was instituted to have the measures repealed. Various objections were made, among them, that the law was unjustly discriminatory in that it applied only to men. The answer to this was made by the women themselves, who poured in representatives from women's organizations all over the state, insisting that the law be made to apply to women also if such a measure were necessary to keep it in force.

This challenge was not accepted and the law still applies to males only. The legislative committee-hearings at the time, although disclosing an active opposition on the part of a small group of physicians, revealed an unexpectedly strong sentiment throughout the State in favor of the law. The following incident may be cited as an example of a widely prevailing opinion. An assistant prosecuting attorney of Milwaukee appearing before the legislative committee said that when the law was first passed he had regarded it as one of the best jokes of the season but that after watching its workings for a number of months he had become convinced that it was one of the most beneficial pieces of legislation ever passed in Wisconsin.

During the legislative session of 1917 thorough revision of the law was made in order to do away with ambiguities and to take advantage of the experience gained in the administration of the law during the four years of its existence. The new law (Chapter 212, Laws of 1917) while less exacting in certain respects, is more practicable. It demands of the physician only a "thorough" examination of the applicant and "the application of the recognized clinical and laboratory tests of scientific search, when in the discretion of the examining physician such clinical and laboratory tests are necessary." It also provides for a free microscopical examination for gonococci at the State Laboratory of Hygiene or a Wassermann test for syphilis



at the State Psychiatric Institute upon the request of any physician in the state.

The more important sections of the law now read as follows:

"All male persons making application for license to marry shall at any time within fifteen days prior to such application be examined as to the existence or nonexistence in such person of any venereal disease, and it shall be unlawful for the county clerk of any county to issue a license to marry any person who fails to present and file with such county clerk a certificate setting forth that such person is free from venereal diseases so nearly as can be determined by a thorough examination and by the application of the recognized clinical and laboratory tests of scientific search, when in the discretion of the examining physician such clinical and laboratory tests are necessary. When a microscopical examination for gonococci is required such examination shall upon the request of any physician in the State be made by the State Laboratory of Hygiene free of charge. The Wassermann test for syphilis when required shall upon application be made by the Psychiatric Institute at Mendota free of charge. Such certificate shall be made by a physician, licensed to practice in this State or in the State in which such male person resides, shall be filed with the application for license to marry, and shall read as follows, to wit:

I,.....(name of physician) being a .....  
physician, legally licensed to practice in the state of....., my  
credentials being filed in the office of ....., in the city of .....,  
county of ....., state of ....., do certify that I have this .....  
day of ....., 19..., made a thorough examination of.....  
(Name of person) and believe him to be free from all venereal diseases.  
.....(Signature of physician).

"Such examiners shall be physicians duly licensed to practice in this State, or in the State in which such male person resides. The fee for such examination, to be paid by the applicant for examination before the certificate shall be granted, shall not exceed two dollars. The county or asylum physician of any county, shall, upon request, make the necessary examination and issue such certificate, if the same can be properly issued, without charge to the applicant, if said applicant be indigent."

Other items of the law (Section 2339, m, laws of 1913) pertain to the settlement of disputes, appeals, persons who leave the State to escape the provisions of the law, and penalties for county clerks who unlawfully issue licenses, or for physicians who make false statements in their certificates. Since these provisions are of secondary interest for our purpose they need not be reviewed.

An additional law (Chapter 783, Laws of 1917) passed in 1917 requires that any person (man or woman) who has ever been affected with gonorrhea or syphilis must secure from one of the state laboratories a certificate setting forth the fact that the necessary examinations and tests have been applied and that the candidate is not in the infective or communicable stage of either of these diseases.

There can be no doubt that, in general, public opinion in Wisconsin is strongly in favor of these measures. This is reflected in the legislative vote which was almost unanimous for the original law. One not infrequently reads in articles written by supposed authorities who do not live in the State, about the folly or the collapse of the Wisconsin prenuptial physical inspection law. As a resident of the State who, though originally somewhat skeptical as to the advisability of the measure, has been following its working with the keenest interest, I find myself greatly puzzled to know the source of information that enables these nonresidents to speak with so much assurance. Certainly they do not get their knowledge from the State Health Officer, the one person who knows in greatest detail how the law is working out, for he feels very well satisfied with the measure and is convinced that it is accomplishing much good. It has already prevented the marriage of a considerable number of people infected with venereal disease in a communicable form.

The charge that craftily disposed candidates can evade the provisions of the law is doubtless true, but this same indictment can be brought against almost any law including those concerning murder, arson, or theft. Nevertheless we do not repeal these laws on this account. It is only fair to look at what a law accomplishes as well as at what it does not.

A small number of physicians still oppose the statute but the noise they make is out of all proportion to their relative numbers. Most of the physicians of the State are apparently trying conscientiously to carry out the intent of the enactment. An occasional applicant for a marriage license resents it, but such cases are decidedly in the minority. Opposition has about disappeared.

Most applicants for a marriage certificate are strongly in accord with the purpose of the requirement and many who have suffered from venereal disease welcome the opportunity of finding just what their condition is and of gaining information about matters of which they were ignorant. Even men from other States, contemplating marriage, have made application to the Wisconsin State Health Officer for examination. In fact, it is not unusual to have young men apply for a preliminary examination long in advance of marriage so that they may have ample time, if necessary, for medical treatment.

Undoubtedly education of the public to the dangers of active and latent venereal diseases is one of the chief benefits of the law. Most men are neither vicious nor intentionally dishonest in marital

matters. They are ignorant. Hence the good that can be accomplished by education alone can scarcely be over estimated.

Of the practicability of the "compulsory reporting" feature specified in one section of another law relating to social disease, passed by the legislature of 1917, there is much less unanimity of opinion among the physicians with whom I have been able to confer. The State Health Officer believes that it will work out satisfactorily. The law requires that "Any physician licensed to practice medicine in this State who is called upon to attend or treat any person infected with gonorrhea or syphilis in its communicable state, shall report to the State Board of Health in writing, at such time and in such manner as the State Board of Health may direct, the age and sex of such person and the name of the disease with which such person is afflicted. Such report shall be made on blanks furnished by the said Board."

This statute further requires that such venereal patients take treatment until the disease in question is no longer communicable and makes provision for their restraint for treatment in a county or State institution if they refuse to take treatment otherwise. Each county of the State is required to make provision for adequate free treatment of indigent individuals. The State Board of Health is also directed to prepare for free distribution upon request among the citizens of the state, printed information and instructions concerning the dangers from venereal diseases, their prevention and the necessity for treatment.

The law (Section 561jm of the statutes) authorizing the sterilization of criminals, insane, feeble minded and epileptic individuals was passed during the legislative session of 1913. It reads as follows:

The people of the State of Wisconsin, represented in Senate and Assembly, do enact as follows:

Section 1. There is added to the statutes a new section to read: Section 561jm. The State Board of Control is hereby authorized to appoint, from time to time, one surgeon and one alienist, of recognized ability, whose duty it shall be, in conjunction with the superintendents of the state and county institutions **who have charge of criminal, insane, feeble minded and epileptic persons**, to examine into the mental and physical condition of such persons legally confined in such institutions.

2. Said board of control shall at such times as it deems advisable submit to such experts and to the superintendent of any of said institutions the names of such inmates of said institution whose mental and physical condition they desire examined, and said experts and the superintendent of said institution shall meet, take evidence and examine and report said mental and physical condition to the said State Board of Control.

3. If such experts and superintendent unanimously find that procreation is



inadvisable it shall be lawful to perform such operation for the prevention of procreation as shall be decided safest and most effective; provided, however, that the operation shall not be performed except in such cases as are authorized by the said Board of Control.

4. Before such operation shall be performed, it shall be the duty of the State Board of Control to give at least thirty days' notice in writing to the husband or wife, parent or guardian, if the same shall be known, and if unknown, to the person with whom such inmate last resided.

5. The said experts shall receive as compensation a sum to be fixed by the State Board of Control, which shall not exceed ten dollars per day and expenses, and such experts shall be paid for the actual number of days consumed in the performance of their duties.

6. The record taken upon the examination of every such inmate shall be preserved and shall be filed in the office of said Board of Control at Madison, Wisconsin, and semiannually after the performing of the operation, the superintendent of the institution wherein such inmate is legally confined, shall report to said board of control the condition of such inmate and the effect of such operation upon such inmate.

7. The State Board of Control shall report biennially in its regular biennial report the number of operations performed under the authority of this section and the result of such operations.

8. There is hereby appropriated out of the State treasury, not otherwise appropriated, a sufficient amount of money to carry into effect the purpose of this section not to exceed two thousand dollars.

Section 2. This act shall take effect upon passage and publication. Approved July 30, 1913."

The State Board of Control is proceeding with great caution in exercising the authority granted it by the legislature in this statute. Shortly after the law was enacted, Dr. Maude R. Williams, a licensed physician and surgeon, was appointed to make a careful study of certain cases in the State Home for Feeble-minded. Not only were the patients themselves examined but their family history was traced as far as possible. In certain cases where duly constituted authorities pronounced procreation inadvisable (Cf. Thirteenth Biennial Rep't of the State Board of Control of Wisconsin, p. 6) sterilization was practised according to the specifications of the law. The operation of vasectomy was performed upon twenty-two males during the months of July and August, 1915, and that of salpingectomy upon thirty-five females during the summer of 1916. Up to date about one hundred feeble-minded individuals have been so treated, of whom some sixty were women. All such patients have made speedy recovery and no bad physical effects have resulted. All are being kept under observation and reports are being made to the State Board of Control from time to time. No serious opposition to the operation for sterilization has been encountered. On the contrary, some of the more intelligent parents of the patients have



favored it. When possible, individuals so treated are removed from the institution to private homes in which good treatment is assured, thus making room for others who are on the long waiting list.

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## EDITORIAL.

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### "THE SAVING OF THE RACE."

THERE appeared not long ago in "*Punch*" of London a cartoon by Bernard Partridge over the above caption. It depicts in a most graphic manner an anxious mother holding her children away from the brink of an abyss and the grasp of a grimy hand stretched forth from the containing mire of disease, dirt, drink, ignorance and poverty. To these war has now been added, with its trail of misery and death. We must acknowledge the fact, however that the latter has also awakened a general desire to overcome these unfortunate and often unavoidable consequences. The ravages of the mortal conflict that has ensnared the greater portion of the habitable globe in its meshes will be reflected for years to come in the efforts to reconstruct the nations involved,—a task not merely political but social and humanitarian as well. We must build for the future and in our attempts to conserve the national life, consider among other things the necessity for reducing as much as possible both morbidity and mortality, especially from preventable diseases, in order to overcome the enormous human loss due both directly and indirectly to the war. It is now quite generally admitted that in this problem there is nothing of greater importance than child-saving work, the conservation of the children of to-day who will be the citizens of to-morrow. For it is of vital importance that the young generation which will reap the fruits of the enormous sacrifices now being made should grow up in the full vigor of mind and body so as to be worthy guardians of the liberties that we hope will be won in the great struggle to make the world safe for democracy.

A full measure of credit must therefore be given to those public-spirited organizations which have brought these matters to our attention and by open discussion have stimulated the preparation of active measures to attain the desired ends. The American Association for Study and Prevention of Infant Mortality at its last annual meeting held in Richmond, Va., accordingly gave its entire time to the consideration of this vital topic in the form of a "war

program." The character of the papers and their discussions which are herewith presented, constitute a practical evidence of the general interest manifested in this movement and show conclusively how necessary it is for the medical profession and the general public as well to give due attention to the great problems which now confront us. The problem is not a new one but it has been subjected to earnest study and efforts at solution for some time but the war brings the matter more acutely to our attention and demonstrates more vividly the necessity for a campaign of this kind. The Children's Bureau of the U. S. Department of Labor as well as the Woman's Committee of the Council of National Defense have united to further this campaign of child saving and as a practical step have inaugurated a nation-wide weighing and measuring of babies and children of pre-school age during the month of April next. This inventory is to be taken in all parts of the country and it will show each community what its children need if the men of the rising generation are to be free from the physical effects which the recent draft has revealed. The manner of distributing the responsibility for the collection of this information among a large number of local committees will serve to carry the campaign to every portion of the United States and this is essential to the success of the movement, for in the last analysis every community must save its own babies if they are to be saved at all.

# TRANSACTIONS OF THE AMERICAN ASSOCIATION FOR STUDY AND PREVENTION OF INFANT MORTALITY.

*Eighth Annual Meeting, Richmond, Va., October 15, 1917.  
Joint Session of the Sections on Obstetrics and Pediatrics.*

DR. C. G. GRULEE, of Chicago, Chairman.

DR. GUSTAV LIPPMAN, of St. Louis, Mo., read a paper on

WHAT THE PEDIATRICIAN CAN DO TO REDUCE MORTALITY IN THE  
FIRST MONTH OF LIFE.\*

DR. J. C. LITZENBERG, of Minneapolis, Minn., read a paper on

HOW THE PEDIATRICIAN AND OBSTETRICIAN CAN COÖPERATE.†

DR. H. R. FREEMAN, of New York, read a paper on

DISEASE CONDITIONS IN OLDER BABIES THAT CAN BE ATTRIBUTED TO  
PRENATAL INFLUENCE AND OBSTETRICAL ERRORS.‡

## DISCUSSION.

DR. EDGAR HINES, of South Carolina, called attention to the failure of physicians in general to recognize the importance of the new-born infant and the high mortality at this time of life and wished that the subject might be given greater prominence by the State Medical Societies and the State Boards of Health.

DR. LYMAN A. JONES, of Boston, mentioned difficulties in the way of the obstetrician in the smaller communities.

DR. HERMAN SCHWARZ, of New York, insisted that early observation of the new-born was of the greatest importance.

DR. FRITZ TALBOT, of Boston, laid stress upon the fact that diseases of the new-born should be given more intense study in our medical schools and more time in the pediatric curriculum.

MISS AHRENS, of Chicago, stated that she thought the facilities for teaching nurses were greatly improved and are improving and that many nurses take post-graduate work along these lines.

\* For original article see page 469.

† For original article see page 463.

‡ For original article see page 459.

DR. V. W. HARRISON, of Richmond, felt that the nurses had a very important part to play in this regard. He also stated that the matter of painless childbirth was overdone and frequently by destroying pain we destroyed the life of the child or harmed its future welfare.

MRS. WM. LOWELL PUTNAM, of Boston, told about the clinic held there that was helping the demand for properly taking care of obstetrics in the middle classes. In this clinic a flat rate of \$25 was charged for each delivery and after care. This clinic was gaining in attendance. She felt that more attention should be paid to the new-born.

DR. JOSEPH S. WALL, of Washington, laid stress on the education of the doctors and felt that the plan adopted by North Carolina of lectures to the doctors by qualified specialists was one which should be given further trial.

In closing the discussion Dr. Lippmann laid emphasis again upon the necessity of work in the State Medical Societies.

DR. LITZENBERG emphasized his former statement and said that the conditions in the rural communities could be met by better education of the physicians while in medical school and that the turning over to the pediatrician of the new-born meant in reality a better general practice.

DR. L. F. ROYSTER, Norfolk, Va., read a paper on

#### THE CARE OF CHILDREN OF PRE-SCHOOL AGE.

This paper called attention to the fact that there has been a decided disinclination on the part of the government to take an interest in its children. This probably comes from fear of paternalism, but a healthy effort in this regard has developed beginning with the milk stations and now the infant welfare clinics. The neglected age, however, is that between infancy and school age. Very little has been done to look after this most important time of life, the formative years. It is the time of life when exanthemata are frequent and tuberculosis is especially a scourge. The child at this age has ceased to be the same care to the mother and consequently escapes her notice much more than earlier; this is especially true if there are younger children in the family. Not only in the home is this age neglected, but very largely also in public life. We have few philanthropies which have a special regard for the care of the child at this age. The essayist suggested that such organized clinics or child welfare stations be established; that this be under the control of a properly prepared physician and a directing nurse; that children who are not critically ill be brought to this station and those who are critically ill be taken to hospitals. That the mother's education be promoted by visits to the home where she should be instructed in hygiene and dietetics, and a trained dietician is highly desirable for this purpose.

There are two classes of children which deserve careful attention, the deformed, either by tuberculosis or infantile paralysis, and the



feeble-minded. In the former class it is best that they should be sent to the hospital, but it is very necessary that the home visitor be able to recognize them early and refer them to clinics.

It is highly desirable that cases of feeble-mindedness be diagnosed early and properly placed. They should never be allowed to enter the graded schools. They should either be put in institutions or their education be provided for otherwise when there are chances for improvement. There should be the closest harmony and coöperation with all organizations, especially health departments of the cities. If all agencies for infant and child welfare work together the child may enter school with a very definite record of its physical and mental disabilities.

Plans of this sort require money, and possible sources of this income are (1) the Federal Government; (2) state appropriations; and (3) municipal and private philanthropies.

Discussion of Dr. Royster's paper was opened by DR. J. HERBERT YOUNG, of Boston. He felt that the age in question was very much neglected and that it seemed the logical extension for infant welfare work. He stated that in Boston the Baby Hygiene Association had the services of a dietitian who had more or less specialized in diets for children and that she was now giving her entire time to this subject. Otherwise the work was very similar to the work with babies. It is important to get into the mother's house and teach her how to cook for the children.

In the general discussion DR. TALIAFERRO CLARK of the United States Public Health Service declared in favor of the use of the school nurses for the care of children of this age. The examinations made by officers of the U. S. P. H. Service had shown that there were serious physical defects acquired by these children through lack of early education. He felt that something might be attained by having the school nurses supervise the sanitation in these homes. He laid emphasis on the care of the teeth. He does not feel, however, that feeble-mindedness can be detected at an early age unless it is of a severe degree. Many of these cases, however, lead us into homes which are usually foci for the spread of disease.

MR. F. S. DODSON, health officer of Framingham, Mass., told how in his community, work of this kind was systematized and the girls in the State Normal School were taking courses in dietetics to teach the mothers in the homes how to cook.

DR. ROYSTER, in closing the discussion, said he recognized Dr. Clark's objection to be a just one, but that he wished to sound the warning that feeble-minded children very readily fell victims to the vice habit and readily reproduced their kind and upon that class of humans we were dependent largely for our criminal class.

It was resolved by the Committee from the Section on Pediatrics that the efforts of the society be directed toward:

(a) A more intensive study and intelligent care of the new-born, and (b) better supervision of the life of the child of pre-school age.

A. For the accomplishment of the first object it recommends:

1. That all first-class hospitals, especially those in connection with

medical schools, be informed that it is the sense of this Committee that all infants at the time of birth be placed in the care of the pediatrician.

2. That we urge on the Pediatric Department of all medical schools the necessity of more instruction in respect to the new-born and its diseases.

3. That we recommend the closest coöperation between obstetrician and pediatrician in the study of prenatal conditions which may influence the life and health of the infant *in utero* and after birth.

4. That we make public so far as possible the fact that alcoholism is one known cause of degeneracy both physical and mental before and after birth.

B. For the accomplishment of the second object it recommends:

1. That so far as possible (to meet an immediate need) the work of the infant welfare stations be extended to cover this period of life.

2. That we recommend the establishment of special departments in our local child welfare societies, hospitals and medical schools to perfect and carry out the care of children of two to six years.

3. That we suggest that the Society include in its educational booklet a dietary and cook-book for children of this age.

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#### SECTION ON EUGENICS.

*Chairman, DR. MICHAEL F. GUYER, of Madison, Wis.*

DR. GUYER presented the report of the

#### COMMITTEE ON VENEREAL DISEASES AND MARRIAGE.

The report of this Committee, consisting of Arthur D. Dunn, M. D., Omaha; Clifford G. Grulee, M. D., Chicago; William F. Lorenz, M. D., Mendota, Wis.; Borden S. Veeder, M. D., St. Louis; Michael F. Guyer, Ph. D., Madison (Chairman), was as follows:

In appointing a committee on eugenics to report in 1917 it was suggested by the last president of the Association that the control or prevention of the marriage of the unfit might well be the subject of the report. Unfitness for marriage, in so far as it is a condition which permits of any degree of control at the present time, centers mainly in the questions of insanity, epilepsy and feeble-mindedness on the one hand, and of venereal diseases on the other. Inasmuch as a very active national organization has been at work on insanity for several years and another dealing with feeble-mindedness has just been launched, to say nothing of several active state organizations engaged in similar efforts, it seemed that the present committee might well concern itself with the question of venereal disease, particularly in its bearing on the welfare of offspring.

While, strictly interpreted, eugenics is concerned only with those hereditary aspects of the well-being of posterity represented in the germ cells, and not with influences which may modify the young

during pregnancy, the committee has felt justified in disregarding this narrower usage in the present instance, since nowhere can one find wastage of offspring more surely in progress than in the train of active syphilis. Any agent which creates a differential birth-rate or death-rate, as syphilis and gonorrhea undoubtedly do, must in the last analysis fall within the scope of eugenics.

Much has been written about the venereal diseases in recent years from all points of view, medical, hygienic, social and moral. While cognizant of all aspects, the committee desires to emphasize the question of prevention of the effects of these diseases upon offspring. Once the attention is focused on congenital syphilis, however, it immediately becomes apparent that the congenital phase is but one fragment of the whole problem and that prevention of the condition in offspring becomes largely a question of prevention and cure in adults.

With many thousands of our young men being concentrated in mobilization and war camps, the whole question is an unusually pressing one just now. It is the universal experience that under such conditions venereal diseases increase greatly and this, of course, is but the prelude to their rapid spread throughout the nation at large with their inevitable train of disabled men, wrecked wives and mothers and ruined offspring. In the present war we already have the testimony from practically all of the countries engaged that many men are being incapacitated by venereal disease, and that in consequence, an alarming increase of venereal disease is also occurring among the civil population.

As to the prevalence of venereal diseases one can only guess. We have a certain amount of information on particular classes but nothing on the population as a whole. It is obvious that tests on a group of supposedly healthy men would show a smaller percentage of cases than tests applied to a group of sick men such as one finds in hospitals, and that averages found for men in general would be far too high for women and children. Moreover, the prevalence undoubtedly varies in different parts of the United States and is not the same in urban and in rural communities. Lastly, studies made in St. Louis, Baltimore, and elsewhere show that syphilis is from two to three times as prevalent in the negro as in the white race.

The appalling frequency found in certain selected classes, however, reveals the widespread ramifications of syphilis and gonorrhea and leads us to believe that their occurrence is far greater than was realized in the past. We are learning, for instance, that syphilis is a very important factor in producing many thousands of disabilities and deaths that were formerly attributed to other causes.

After pointing out that from 22 to 25 per cent. of the patients entering Bellevue Hospital give positive reactions when tested for syphilis, the monthly bulletin of the Department of Health of New York City (March, 1915), expresses the belief that proper tests applied to the public at large would show that one-tenth of the adult population of New York City are syphilitic. Dr. Edward B.



Vedder, captain in the Medical Corps of the U. S. Army, estimates (*Social Hygiene*, July, 1916) that about 20 per cent. of the young adult male population of the class from which the army is recruited in times of peace, and that about 5 per cent. of the young men entering our colleges, are syphilitic. He regards syphilis as a greater menace to public health than any other infectious disease, not even excepting tuberculosis. All authorities agree that gonorrhea is more widespread than syphilis.

Impossible as it is to get accurate data for the population at large, even a cursory examination of the available facts shows the gravity of the situation. And when we take into account the further fact that physicians and sanitarians already know enough about the causes, prevention and cure of venereal diseases to insure their sanitary control and gradual eradication if public opinion would permit of the practical application of this knowledge, it is evident that failure to cope with the situation must be charged to our ignorance, our carelessness, our prudery and our bigotry as a people. Unquestionably the backwardness of public opinion and the unfortunate confounding of this sanitary problem with questions of morals are the chief impediments to bringing these diseases under control.

Since an enlightened public opinion is an indispensable preliminary to further progress, strong and persistent efforts should be devoted to the task of education. The committee believes that the greatest advancement will be secured through a frank, unsentimental, scientific statement of the facts to the people. The public must learn that practically every prostitute is a center of dissemination; that there is a steady procession of these diseases from the women of the street to the women and children of the home; that the diseases in question may be conveyed through kissing and by various articles used by or on infected people, particularly implements of the kitchen, the toilet and the barbershop; that very many of the serious afflictions of later life, such as paresis, locomotor ataxia, certain forms of rheumatism, blindness, heart disease, arterial sclerosis and aortic insufficiency, as well as much general impairment of health are caused exclusively or mainly by an earlier infection of syphilis. It should be well known that early stages are usually curable, that practically all stages can be benefited by treatment, and that they can be controlled as regards contagion.

It should be known that some 25 per cent. of all blindness is caused by gonococcus infection and that nearly all blindness of infants acquiring blindness at birth or shortly thereafter, is due to this germ; that to it also is charged some 80 per cent. of the serious inflammatory diseases peculiar to women which often necessitate hazardous operations and frequently result in death or permanent invalidism; that an incompletely cured case is dangerous and that a man in this condition, thinking himself well, may years later marry and give the disease to his wife making her an invalid for life and unable to bear children, or causing blindness in a child when born.

The importance of early diagnosis and intensive treatment as



well as the appalling results of neglect cannot be too strongly emphasized, nor can the necessity of continuing treatment until the patient is completely cured. One of the most insidious factors in the situation lies in the fact that the visible symptoms of the disease in question usually disappear long before the cure is complete so that it is difficult to convince the patient that he needs further treatment. This is particularly true of syphilis.

As a general rule no syphilitic should contemplate marriage unless the Wassermann test remains negative after at least a year of careful treatment and continues negative after a provocative Wassermann. Inasmuch as syphilis frequently, and sometimes early in its course attacks the central nervous system, it is advisable for the patient, even after the blood test continues negative, to have a test of the spinal fluid made because of the danger of a cerebrospinal form. While such a patient would possibly not convey the disease to his wife or children, he should be aware before marriage of his own likelihood of being stricken with paresis or other nervous forms of the malady and thus becoming a burden on his family.

As to effects on progeny, improved diagnosis shows that the transmission of syphilis to offspring is far more common than was previously thought. Studies by Jeans (*Am. Jour. Dis. of Child.*, Jan., 1916), for instance, show how important it is to investigate the other members of each patient's family. Numerous cases of latent syphilis are thus being unearthed. Many pathological conditions in children of which formerly the causes were obscure are now known to be the result of syphilitic infection. Not only is there a waste of potential citizens to the State by miscarriage and death twice as great in syphilitic families as in similar families which are not syphilitic, but the children which survive are likely to be shot through and through with organic defects and degenerative changes. Congenital syphilis operates most profoundly, perhaps, through markedly harmful malnutrition although it is not infrequently accompanied by a rash, a palpable spleen, a rhinitis or coryza, or a desquamative dermatitis. Moreover, widespread pathological lesions are likely to occur throughout various organs of the body. Of the many different conditions which may result, often tardily from this infection in children, the most usual perhaps are affections of the central nervous system, bones, joints, eyes and skin. In spite of recent statements, based on defectives in institutions, expressing doubts as to a causative connection of syphilis with feeble-mindedness, careful clinical tests (Vedder: *Am. Jour. Med. Sc.*, Oct. 1916) on one hundred children who manifested the results of so-called "tardy" syphilis, showed approximately one-fourth to be mentally deficient, and Jeans and Butler (*Am. Jour. Dis. Child.*, Nov. 1914) found five times as much feeble-mindedness in syphilitic as in nonsyphilitic families of the same class. While it is seldom clear just which is cause and which effect in such cases, it is a noteworthy fact that syphilis and feeble-mindedness often go hand in hand.

With children as with adults the importance of early diagnosis

should be emphasized, since treatment of the infantile type is hopeful while therapeutic results on the "late" transmitted form are likely to prove disappointing. Jeans and Butler (*loc. cit.*) found that 33 per cent. of syphilitic children over thirteen months of age showed permanent disabling damage of the nervous system and 18 per cent. long continued disabling impairment of vision.

Urgent means are needed to compel the attendance of luetic children at the clinic until properly discharged. It is a common experience that many never are returned after the initial visit or are brought for a short period only, possibly until the acute symptoms are cleared up. This keeping of the clinic and the home in contact is a function that might well be exercised by some sort of a social service department. The St. Louis Children's Hospital has been able to get compulsion into effect through the Juvenile Court on the ground that syphilitic children not under treatment can be brought into Court as "neglected children." The mere knowledge that treatment could and would be enforced through the court, if necessary, usually brought indifferent or recalcitrant parents to time because they feared the publicity which might attend appearance in court.

In addition to the lecture and exhibition methods now in vogue we believe that much good can be done by preparing educational placards and having them placed, by law, if necessary, in public and semipublic toilets used by men, such as those of hotels, saloons, boats, barber-shops, railway cars and stations, stores, factories and shops. To give them the necessary weight of authority and to combat quackery such cards should bear the signature of the City or State Board of Health. They should drive home their message by the use of nontechnical language, short sentences and emphasis of type. The following statement, though not intended particularly as a model, will give an idea of what the committee thinks might well be included in such placards:

CITY  
NOTICE OF THE  
STATE  
BOARD OF HEALTH.  
BEWARE OF SEX DISEASES.

SYPHILIS (commonly called pox, lues, or "blood disease") is as common as tuberculosis. GONORRHEA (sometimes called clap or "a dose") is still more common.

Both of these are very dangerous diseases, not only to you who have it but to your associates, particularly your wife and children.

Though commonly contracted through sexual intercourse either of these diseases may be transmitted by contact with the articles, such as clothing, towels, drinking cups, and other utensils, used by infected people. A person with syphilis may transmit it by kissing since the germ can enter the body through a very slight break in the skin or mucous membrane.

Both diseases are usually curable, if taken early. Each requires very careful treatment, and that for syphilis must be long continued

(one to three years), even though the symptoms of the disease have disappeared. The germs of either of these diseases may linger for years in improperly treated cases and may infect others or finally ruin the patient himself.

If you are infected see a reputable physician (not an advertising "specialist!") at once and take treatment until you are pronounced cured. If you cannot afford the services of a private physician call for free blood-tests, advice and treatment at the (City or State) Board of Health Dispensary, ——Street, Clinic hours from —— to —— o'clock daily.

*Beware of Quacks, Self-cures and so-called Specifics for Blood Poison!*

Practically all prostitutes have or have had one or both of these diseases and are a sure source of infection. Remember that sexual intercourse is not necessary to keep a man in good health.

At least one-fourth of all blindness, and practically all blindness found in babies, is due to gonorrhea. A vast proportion of the surgical operations on women and many deaths are likewise due to gonorrhea.

Softening of the brain (paresis) and other forms of insanity, and many afflictions of other organs of the body, as well as a large proportion of sudden deaths are caused by a syphilis perhaps thought cured and long ago forgotten. If you have ever taken treatment for syphilis, in order to be sure that you will not infect your wife or taint your children, have a blood-test made before you marry.

In addition to this means of education we believe that boards of health could advertise in the newspapers to advantage. Judging from the profusion of notices to be found in such papers as accept the advertisements of so-called men's specialists and quack nostrums, a large and impressionable audience should be reached by this means. Some departments of health, in fact, are already successfully using the agency of newspapers. The New York City Board of Health, for example, advertises as follows:

**Venereal Diseases.**—Confidential Advice Regarding Gonorrhea, Syphilis and Sex Diseases Can Be Obtained Free at Room 207, The Department of Health, 149 Centre Street, 9 A. M. to 12 M. daily, Sundays and Holidays excepted. Avoid Advertising Specialists and Patent Medicines.

The committee also believes that any group of individuals sufficiently in earnest can with relatively little effort succeed in interesting Women's Clubs, Mothers' Clubs, Teachers' Organizations, Commercial Clubs, or almost any organization of serious purpose in their State, in agitating the question sufficiently to bring about whatever legislation or board of health regulations may be necessary to enforce the posting of such placards as those recommended above, and to aid in securing the establishment of public laboratories, clinics and dispensaries.

As to legislation in general, without disparaging in the least what has been done in the various States in a more or less experimental



way, the committee believes that those forms of legislation which grant State and municipal boards of health power and funds to establish what in their experience may prove to be wise regulations, are preferable to direct legislative enactments aimed at physicians and patients individually. Any law or regulation will be successful just in the proportion that the patient sees it is for his own good. While it is highly desirable to have a record of every case treated by physicians reported to some central bureau, no successful method of accomplishing this end has, to the knowledge of the committee, yet been devised. So greatly is the scandal of publicity feared by venereal patients that, in the opinion of the committee, attempts to enforce so-called "reporting" laws will drive such patients from honest physicians who report, to quacks and proprietary medicines. If merely the number of patients treated is reported without name, then little accurate information is gained because even if all physicians can be induced to report, such patients make frequent changes, the same individual will be reported repeatedly by different physicians and institutions.

It is imperative that it be made easy for those suffering from venereal diseases to secure advice and treatment. To this end every State should have thoroughly equipped laboratories in which diagnosis of venereal diseases shall be made free of charge to physicians or patients. This is already the practice in some States. Such institutions should be equipped not only to make routine Wassermann tests but such supplementary and corroborative tests as atypical or obscure cases may necessitate. It is clear, moreover, that States and cities must assist physicians more and more, not only in diagnosis, but in helping to provide the more expensive forms of treatment. Money used in supplying neosalvarsan for treatment of syphilis, or vaccines for gonorrhea, is well spent by any State or municipality.

While for the indigent there must be free treatment or treatment at a nominal fee at public dispensaries, there should also be beds for venereal patients in general hospitals. If all such patients are compelled to go to special institutions, then, because of the social stigma, many who should have treatment will conceal their conditions and suffer the appalling results of neglect. The absurdity of hospitals refusing to admit patients avowedly suffering from venereal disease is evident since it has been shown in several hospitals which now perform a Wassermann reaction on all patients that from 15 to 25 per cent. of patients admitted for other cases are syphilitic.

The Wasserman test should become a routine matter in every public hospital, prison, workhouse and institution for delinquent, insane or feeble-minded, at least, and it might well be insisted on for such venders and servants as come into close contact with food materials.

In the hope that some of its suggestions may prove of value either to those who are already actively combatting venereal diseases or to those who have not yet entered upon such a campaign, the committee, in conclusion, recommends that printed copies of its report



be sent to the U. S. Public Health Service, to congressmen, to the medical officers in charge of the health of the United States troops, and to the several State boards of health.

DR. GUYER also presented a

#### REVIEW OF WISCONSIN EUGENICS LEGISLATION.\*

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#### SECTION ON OBSTETRICS.

DR. A. B. EMMONS, 2d, *Chairman*, absent on Military Service.  
*Acting Chairman:* MRS. MAX WEST, WASHINGTON.

DR. MABEL BELT, Baltimore, presented a

#### REVIEW OF REPORTS ON WAR WORK IN ENGLAND, FRANCE AND GERMANY WITH SPECIAL REFERENCE TO THE CARE OF WOMEN DURING PREGNANCY AND LABOR.†

DR. F. V. BEITLER, Registrar of Vital Statistics State Department of Health, Baltimore, read a paper entitled

#### WHAT THE HEALTH AUTHORITIES OF THE UNITED STATES ARE DOING AND ARE PLANNING TO DO FOR THE REDUCTION OF INFANT MORTALITY DUE TO PRENATAL AND OBSTETRI- CAL CONDITIONS; COMMENTS ON THE FINDINGS OF THE QUESTIONNAIRE SENT OUT BY THE COMMITTEE ON OBSTETRICS.‡

#### DISCUSSION.

DR. HELEN MACMURCHY, Toronto.—I thought it might be of interest to recall the generally accepted statement of Dr. Amand Routh, of London, who has repeatedly said that in his opinion infant mortality during the first year after birth is just about equal to the mortality of children *in utero*, including stillbirths.

DR. THEODORE C. MERRILL, Washington, D. C.—The work developed in Canada, New Zealand, Australia and other distant parts of the British Empire, has closely paralleled that in England, Scotland and Ireland. The report of the Local Government Board for England and Wales points out a reduction of infant mortality prior to the war and including the first year of the war, with a slight increase over the latest gain, as shown by the figures last recorded.

The entrance into military medicine of a large number of physi-

\* For original article see page 485.

† For original article see page 474.

‡ For original article see page 481.

cians depleted the home supply. The resulting lack of medical resources at once made it necessary for the community to look out for its own interests and produced an extension as well as a concentration, of maternity and child welfare activities. Pressure was thus brought to bear upon the Local Government Board, the official body which is in a position to provide for the allotment of public funds.

War conditions surrounding maternity and infancy have suggested more strongly than ever before the creation of a department or executive organization devoted exclusively to the domain of public health. Lord Rhonda has expressed himself as being in favor of this idea, but of course he is now Food Dictator.

The Rockefeller Foundation has formulated a plan for the initial expense of installing maternity and child welfare centers, the cost of upkeep to fall upon the community. So far as I am aware, no center of this kind has yet been actually established. The Local Government Board has urged the establishment of centers or stations by organizations privately financed and the extension of education by talks, demonstrations and all other possible ways.

Regarding the conservation of infant life, figures given by some of the colonies show a remarkable decrease in infant mortality, so much so that some economists are somewhat skeptical as to the reports.

In connection with the administration of the Act concerning extension of the notification of births, the fact has been made especially clear that infants placed under the care of persons compensated for this work receive better care if the compensation is paid by the week than when the caretaker is paid by the piece or job. Frequent payments mean frequent inspection of progress and hence show very soon whether a caretaker is faithful and efficient or not.

Studies made from the inception of the war have brought full into public gaze the especial necessity for conserving infant life in France. The steadily declining birth rate has been an old and neglected story for much too long a time. Now it can no longer be ignored. A commission appointed to study and report on the subject finds that there is no impairment of French virility, but that the question is economic. People are unwilling to incur the expense inseparable from the bearing and rearing of large families, from the standpoint of the interests of children as well as those of the parents. It will be necessary to meet this national problem, otherwise France, in fifty years, will be about as influential in Europe as Portugal is now.

The French studies bring out the necessity for having a woman superintendent intermediate between women employees and the factory manager. Her services alone can secure to women workers the hygiene and oversight peculiarly required by their sex.

The socialization of maternity and infancy, in France, is well brought out by Dr. Belt by her mention of the large number of women receiving Government aid during pregnancy and confine-

ment. The state must take an increasingly important share in caring for the lives of women workers, especially if they are to labor to support the Government in time of war. What it will finally do to encourage child-bearing is now before the world. It is inconceivable that the genius of France cannot solve the French national problem. Perhaps no greater misfortune could befall the world than to suffer Gallic mentality to be submerged in a twilight of the gods.

DR. FRANCES HOLLINGSHEAD, Director Division of Child Hygiene, State Department of Health, Columbus, Ohio.—I am afraid the Ohio Bureau has not anything definite to offer along these lines. We have been trying in small places to establish confidential agencies like those used by Dr. Lydia DeVilbiss in Kansas. This plan interested me especially. We have attempted to establish them in small places where there are public health organizations as well as to develop a regular bureau in the state department, where the work so far has consisted in answering letters from mothers throughout the state. We have been establishing these small agencies as part of the war program in some of the communities of five to ten thousand. I think we need in state work more stimulus for activity in the smaller place than in the large city. In the cities you have a certain amount of machinery with which to work; in some places there is often nothing. We urge that the small places shall begin with the child in the prenatal period, or, if this is not possible, at the pre-school age. We hope to strengthen this movement in the coming year and we have tied up this work as far as possible with the whole obstetrical scheme, although there is very little in the way of an organized plan in many places, thinking this may be a first step in the ultimate development of child welfare work. The obstetrical scheme largely depends on the physicians in the local community. I have been much struck this morning with the discussion about the responsibility of the colleges for preparing the young physician to handle this service; I think that is what we want; but some of them must be urged to go to these smaller places and do this work, instead of all staying in large cities.

DR. DOROTHY REED MENDENHALL, Madison, Wisconsin.—You may be tired of hearing of extension work, but perhaps you will be interested in knowing that the University of Wisconsin is now extending its extension work and sending out physicians from the University Clinic to give medical extension work in the little towns, to bring recent medical development and training to the rural physician. I think that is a great step toward what has just been suggested. For four years we have had in Wisconsin extension work in obstetrics, both correspondence courses and by lecturers who go out and give health talks, followed by clinics for mothers and children. The lecturers go all over the state. Last winter we were 40 miles from a railroad in one instance, where the clinic was attended by our friends on snowshoes. Though this is a small work, we believe that it is one way to reach all over the state. Through the correspondence courses and through the Children's



Bureau we find we reach the very small places where perhaps there is not a physician within 25 miles. It is an educational work purely.

Statistically you may be interested in the fact that we were asked to go over all the birth and death surveys for eight years—that is for the time during which our registration has been at all adequate. We were interested to find that at least 50 per cent. of deaths of children in first year are in the first month of life, in 1915 33 per cent. About 80 per cent. of these can be proved to be from prenatal causes. We had to make analysis of our death certificates for this purpose because such deaths as “ammonia” and “congenital senility” during the first three days of life had to be explained! We considered those to be of prenatal origin, though we did not know exactly what was in the mind of the physician when he made that diagnosis. It was interesting to find that we could prove a pet theory of mine, that our death rate in the first month of life is 10 per cent. higher in the rural districts than in any city. We are always hearing that it is so healthy to be born in the country, so much more so than in the city, but it is not so, at any rate, in Wisconsin.

DR. BERTHA F. JOHNSON, Chief, Division of Child Hygiene of the New Jersey State Department of Health.—As we have only two trained workers on the staff of the Division of Child Hygiene we are not doing much prenatal or obstetrical propaganda except what is done in connection with the exhibit.

We have a child hygiene exhibit on the road, in connection with which lectures, illustrated with moving pictures and lantern slides, are given. One section of this exhibit deals with prenatal care and one with care at birth. There have been a few objections by hypocritical persons concerning the lack of “delicacy” in showing such material to children, but as a rule we have had the heartiest support of the school authorities and school nurses.

The nurse on our staff holds mothers’ meetings almost every afternoon when the exhibit is shown and gives the mothers instruction on prenatal care and care at confinement. When the exhibit is not in the field we do some lecturing for women’s clubs and other organizations. We have distributed copies of a leaflet on prenatal care issued by the Children’s Bureau.

DR. GRACE L. MEIGS, Children’s Bureau, Washington.—I should like to discuss especially Dr. Beitler’s paper—what the government agencies are doing for prenatal and obstetrical work. We can say off-hand that they are doing very little. The paper showed us that state and city departments of health are doing actually very little to combat this great problem of the excessive death rate among babies due to prenatal causes, and I may say also the death rate among mothers.

Perhaps some of you know the Bulletin we prepared on Maternal Mortality. In preparing it we found, much to our surprise, that the death rate from childbirth in this country among women of child-bearing age, is actually greater than from any disease except tuberculosis. That is a fact which statistics hitherto have always



concealed. We have taken it for granted that the improvement in asepsis and the great advances in obstetrics have led to almost complete abolition of danger in childbirth. Actually, a woman between fifteen and forty-five is in greater danger from this cause than from any disease except tuberculosis.

I think the great duty of governmental agencies is education. That is the one place where we can make some impression on the problem. The very fact that all of us did not realize before these figures were dug out of the reports, that women were still dying from preventable complications in childbirth, proves that people still have far less knowledge than they should have that women ought to be protected.

I think state departments have the task before them to show in all their literature that the care of women at childbirth and before confinement is a very important problem.

Another way in which state departments can help is through their influence on public health nurses of the state. You heard what splendid work Virginia is doing in helping to supervise and establish county public health nursing service—more than ninety public health nurses in the state.

We all realize in our work for infant welfare that the one person who can accomplish most in education is the public health nurse. Our Bulletin reaches a certain number of people, but the people we need most to reach do not read these Bulletins. I feel that the state department of health can do a great deal by showing the nurses under their supervision and advice the importance of these prenatal and obstetrical problems.

I do not wish to start on the question of governmental work for prenatal and obstetrical care in the cities; it is an enormous problem. I would suggest to the chairman that he call on Dr. Bolt to talk about the work proposed in Cleveland, and then on someone who can tell about the work in New York, by the committee of which I think Dr. Lobenstine is chairman, which has established a very interesting unit for prenatal care under the auspices of the Women's City Club and the Henry Street Settlement.

DR. R. A. BOLT, Chief, Bureau of Child Hygiene, Division of Health, Cleveland.—I have jotted down a few words in regard to what we have attempted in Cleveland to meet the emergency of the war situation. When I arrived in Cleveland the first of June to take charge of the Bureau of Child Hygiene, I found that a number of nurses had joined the Red Cross and gone to France, and three or four of the best physicians skilled in child welfare work and pediatrics had enlisted for various forms of service. This left us rather short-handed, and we had to devise means to meet the emergency for our summer infant welfare campaign.

It occurred to me that it would be a very favorable time to carry on a certain amount of education with the mothers of the community and enlist their support for the campaign during the summer.

So I proposed that the affiliated mothers' clubs of the city should form what we might call a "Home Guard." In coöperation with

the Bureau of Public Health Education I outlined a course of lectures in child welfare work, and sent out return post cards from the Health Department. This met with a hearty response, and a course of talks was given, outlining just what we contemplated doing. We then put it up to the mothers to conduct a health survey of a certain district in the city by a house to house canvass. This was done not merely for the purpose of getting certain data, but in order to bring the mothers into direct contact with actual conditions in Cleveland. It was not, however, the poorest, but in an average district. We had cards with definite questions. We wanted to find out the number of children in a family, with their ages. Then we asked, "Are the births registered?" Asked the name of the physician or midwife who delivered the last child; found out the milk station; whether there was adequate ice supply and an ice chest; found out what were the conditions as to general sanitation of home; flies, garbage disposal, etc. In this way the mothers had their attention called to the fundamental factors that enter into the infant mortality problem.

A number of these mothers volunteered their services to help us in other ways. Some gave us automobile service, others helped in getting out birth certificates, and in many other ways, so we were able by volunteer service to get certain work done that would not have been done otherwise.

One of the acute war problems we are facing in Cleveland is the greatly increased demand for boarding homes for babies. A number of women are going into industrial work, and other conditions, such as the influx of foreign and negro population, have brought added problems. We have attempted to keep the baby with the mother as long as possible; where it was not possible we have tried to get one baby in a home. We have recently worked out a complete program whereby the selection of these homes, that is to say the primary nomination of them, may be by agents of the Humane Society, by health nurses or any similar source, but the investigation of the home goes through from the standpoint of the Bureau of Child Hygiene.

Dr. Meigs wanted me to speak as to our scheme for prenatal work. I am sorry Dr. Emmons' questionnaire did not get into my hands until just before I left Cleveland, but I think it illustrates fundamentally the point brought out, that is, great need for municipal prenatal work.

19,016 births were registered in 1916 in Cleveland. We must guard closely against putting too much stress on the interpretation of birth registration, because I think in most places it is very faulty. Until recently we did not get over 70 per cent. in Cleveland. Now it is probably between 85 and 90 per cent. Out of 19,016 registered births last year we had 2032 deaths, and out of that number 634 died during the first two weeks of life. We have in Cleveland approximately 175 licensed midwives and approximately 1200 physicians. These 175 midwives delivered 7256 babies last year; the rest were delivered by general practitioners and obstet-

ricians—and others, and some delivered themselves. So the acute problem for us to solve is to reduce mortality in the early weeks, and we conceived the idea of starting this maternity welfare work as a bureau of the Department of Health, like the bureau of child hygiene or tuberculosis or communicable diseases.

We are planning to put it into one district, called the University District. This district has been turned over to the Western Reserve University School of Applied Social Science, as an instructive district for public health nurses; the nurses are under the instruction of well trained public health nurses for a one-year course. They also receive some instructions from the chiefs of the bureaus in the Health Department in their special line of endeavor. This district has been going for nearly a year and has proved very valuable in giving us definite information and high grade public health nurses.

We felt it was better to start on a small scale in this district as a laboratory, and gradually extend it to other districts.

We propose to begin a campaign for this prenatal work, and ask an appropriation of ten thousand dollars next year to cover this work. We think we ought to get it, as we feel that our Health Department is about as far from politics as any in the country. I visited thirty cities last year, and, on coming back to Cleveland, I felt proud of the way our department had been elevated out of politics. We have a broad gauge educational policy, with a full time publicity man; our chiefs are specialists in their lines, and they are out of politics. Until people appreciate the need of specialists in health work we can never do effective work in infant welfare.

In addition to the recommendation contained in the report of Dr. Beitler, with reference to the necessity of defining a stillborn child, and the registration and reporting of stillbirths, your committee begs to submit the following:

Since it is manifest that if the war goes on, America must face the possibility of counting her losses by the million, as the warring countries abroad are already doing, and since, further, like them, she can only make good those losses from the children of the country the first imperative measure to be taken is to save the lives of babies now being needlessly wasted.

It is well known that many thousands of infants who now die might be saved by the application of certain preventive and remediable methods, with which this Association is thoroughly familiar. It is also well-known that the shockingly large loss of infant life occurs in the earliest hours and days of life, because of lack of sufficient and suitable care of the mother before and during childbirth; it is also well understood that the efforts put forth to remedy these conditions will raise the health standard for many babies and young children.

Therefore, it would seem to be the plain duty of the Committee on Obstetrics to recommend to the Association that it should continue in every possible way its work of public education, and should attempt to devise new methods of educating the public to the paramount necessity of saving young life in this country through the



promoting of every proper measure for extending and improving prenatal and obstetrical care.

Possibly one such method might be that of addressing letters to state and municipal boards of health, as was done last year, this time urging them to take up such work, or to extend it. The appeal may be made on the basis of last year's rather poor showing.

Another, to appeal to those institutions who are contemplating the teaching of infant care to start at the logical beginning, namely, prenatal care.

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## TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

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*(Continued from February)*

SECTION ON PEDIATRICS.

*Stated Meeting, December 13, 1917.*

DR. ROGER H. BENNETT, *in the Chair.*

DR. HENRY DWIGHT CHAPIN read a paper entitled

### THE NATIONAL DANGER FROM DEFECTIVE DEVELOPMENT OF GROWING CHILDREN IN TIME OF WAR.

The widespread effect of war upon all the component parts of society is manifest to all. Some of these effects are temporary but others threaten to become permanent. Among the latter the influence of war upon children forms an important factor. The most immediate danger probably falls upon growing children, who from actual poverty or scarcity of food may fail to secure proper nourishment. Undernourishment is here liable to result in underdevelopment that may be permanent. As the child is the best and most lasting asset of the State this is unfortunate both in time of peace and war. As for the latter we must remember that children form the great second line of defense in case of future trouble.

As the result of a statement that was given wide publicity some time ago, that 70,000 children in New York City went breakfastless to school, a committee was appointed to make an intensive study of life conditions among 1400 school children in the poorest section of the city. A very careful investigation was made, as a result of which it was found that of the 1400 children investigated, 0.7 per cent. had no breakfast; 1.2 per cent. had tea or coffee only, 0.6 per cent. had bread and water, and 48 per cent. had tea or coffee with bread or cake. The remaining 48.5 per cent. seemed to have an adequate breakfast, 14.8 per cent. being reported as having milk, bread and cereal, and 33.7 per cent. as having cereal, meat or eggs. Thus it was learned positively that one-half of these children started the day with an inadequate meal. A certain number were inadequately



fed during the remainder of the day, as 2.8 per cent. had no meat or eggs, 12.1 per cent. had coffee or tea 3 times a day and 28.1 per cent. had these beverages twice a day. The important point brought out by this investigation was that poverty alone was not responsible for this defective diet. Of the children 10.4 per cent. showed marked malnutrition, but enlarged adenoids, bad teeth and swollen glands were very common, 45 per cent. having enlarged glands and 74.9 per cent. bad teeth. Although the food given these children was unsatisfactory, it was only one of the contributory causes of the unsatisfactory condition of these children. Poor housing, bad street environment, ignorance and faulty management, were all factors entering into the problem. What part each of these factors played in the problem of undernourished children must be studied at each epoch under investigation. In the study of 1905, parental ignorance and lack of proper oversight were more important factors than lack of ability to secure food. At the present time rapidly mounting prices of all kinds of food seemed to be assuming a more important place and overtopping other factors in the problem.

The New York Association for Improving the Condition of the Poor has found the cost of food representing 65,000 calories for a family of five in 1915 was \$5.84 per week; in November, 1917, it was \$8.97, an increase of \$3 in two years. The increased price of milk has already had an influence on the nutrition of poor children and will have still more in the future. A survey recently made by the Department of Health, the Association for Improving the Condition of the Poor and the Mayor's Committee on Milk, including 5438 children, showed that 2148 of these children were drinking tea or coffee. Many families had dropped the use of milk entirely and a considerable number had substituted condensed milk. A statistical study of wages shows that, although wages have increased, the increase has not been in proportion to the increase in the cost of food. It seems to be the rule for children at all stages that small family incomes and poor nutrition usually go together. The statistics of the Federal Children's Bureau show that the minimum for a family of five in New York, in 1917, is \$980 as compared with \$840 in 1915. One-half the married men in New York were receiving \$15 per week or less, while \$17 is the minimum requirement. There is no doubt that the effect of all this upon the nutrition of many children has been marked.

In 1916, 95,030 children in New York were graded according to their nutrition by the Dunfermline scale. According to this scale there are four grades: 1. This means excellent, the nutrition of a child in good social standing. 2. Means that the child falls just short of this. 3. The child requires supervision and is on the borderline of serious impairment. 4. The child requires medical treatment and his nutrition is seriously impaired. As a result of this study it was found that 30 per cent. of the children belonged to the first grade; 59 per cent. were passable and were classified in the second grade; 0.08 per cent. were poor and 0.03 per cent. were very poor. In a recent report by Mr. Frank Manny including all the children in

Public Schools 40 and 50, 2538 children were examined and classified according to the Dunfermline scale. Of these 21 per cent. were in the first class; 43 per cent. in the second, 24 per cent. in the third and 12 per cent. in the fourth. These are not among the worst conditioned schools, but if further study shows the same relative proportion among the four nutritional grades it will mean that there are 120,000 cases of malnutrition that call for immediate attention and that 240,000 would be on the border-line, that is, needing careful observation. An interesting study as to the number of children in families represented by these pupils shows as might be expected that the poorer nutritional cases are apt to be found in the large families. The foreign-born children, however, give a better showing than the native born. The studies show a tendency to an increase of under-nutrition under present conditions. It would seem that immediate steps should be taken to deal with this serious situation. The first effort should consist in an attempt to standardize medical examination records so that data from various sources can be compared. This could be added to the nutritional scale already in use. All possible defects might thus be collected in four groups. The degree of under-nourishment, together with the kind of defects discovered and the type of care required would afford an indication as to how the case should be handled.

After a careful study of the problem of undernourished and defective children in any locality, the local authorities should correlate all the relief agencies to see that every growing child has sufficient food, if necessary helping and supplementing these agencies. In any case a campaign of education must precede and accompany relief.

#### DISCUSSION.

DR. S. JOSEPHINE BAKER said: I would like to emphasize the grave importance of this question of the undernourishment of children. For the last two years we have known that conditions in this regard have been increasing and for a year and a half we have been trying to bring the matter to the attention of the public. In 1914 our statistics showed that 5 per cent. of the children in the public schools of this city were suffering from malnutrition; in 1915 this had risen to 6 per cent. and in the school year 1916-17 to 12 per cent. These figures were sent in by the medical inspectors in their ordinary line of duty but, in order to determine whether or not there was any basis of error, Dr. Willis, who is Chief of the Division of School Medical Inspection, and myself made a personal investigation. Our cases are all tabulated according to the Dunfermline scale, as described by Dr. Chapin. We found that some of our doctors have become so accustomed to seeing undernourished children that they have come to consider undernourishment as a racial or local type and in applying the Dunfermline scale they had taken the children of certain localities and grouped them into four classes, calling the first No. 1, and the others Nos. 2, 3 and 4 respectively; in other words, they had made their diagnoses relative rather than absolute. They knew that they were doing this but stated that

all the children of certain neighborhoods showed a condition of undernourishment and therefore they felt that the condition was so universal that they had simply graded degrees of actual undernourishment as there were no children to be placed in the No. 1 group. The figures we in the Bureau of Child Hygiene have given out, and the additional figures collected by Dr. Chapin, show that this condition of undernourishment among children of this city is critical. The statement should be made, however, that malnutrition is not the result of actual starvation. The children do get food, but the condition is the result of wrong feeding and long-continued underfeeding. It is true that there has probably never been so little unemployment nor have wages been at so high a level as they are at the present time, but the increase in wages has not kept pace with the buying power of a dollar, particularly as far as food is concerned. Where the food supply of a family is curtailed, the child is the first to suffer because he needs food for growth as well as for the replacement of bodily waste. The adult may stand a restricted diet fairly well; the child is almost always permanently impaired.

With the beginning of this war there was an abandonment of much relief work, particularly among the children, in the European countries, and this was followed by an increase in the infant mortality during the first year of the war, and by increase in the undernourishment of children in the belligerent countries. When the governments realized the effect of this neglect, they immediately took steps to remedy the mistake and the various countries of Europe are now doing more relief work among infants and children than ever before.

A most interesting report has come from Dr. Lucas in connection with his work in Belgium. He found tuberculosis on the increase among the children there and he traced this increase directly to undernourishment, but he stated that since the canteens for children were established in Belgium, the incidence of tuberculosis has been much decreased. We must realize that undernourishment of children means lowered resistance and that continued undernourishment will have a permanent effect upon the development of these children. We must expect to have a marked increase in the incidence of tuberculosis in this country unless the problem of malnutrition in our younger-age groups is given immediate attention. Not only will there be an increase in tuberculosis but probably in all the other diseases of childhood, as this lack of resistance and undernourishment strikes at the foundation of our health problems.

In investigating small groups of children a short time ago, I made an effort to find out what they were eating. I found that the children classified as Grade 4 (undernourished) were those who had had only tea or coffee and bread for breakfast. Among the Grade 3 children were found a few who had had a cereal in addition. Among the Grade 2 group, the border-line cases, we found that many had had cereal in addition to either tea or coffee and bread and in the Grade 1, or the normal children, there was hardly one who had not received an adequate breakfast of cereal, eggs and milk. This small investiga-



tion seemed to show that there was a marked relation between malnutrition and the food these children were receiving. We must remember, however, that malnutrition is an exceedingly complicated entity. It is not dependent upon feeding alone but upon environmental conditions as well. In order to attack this problem from all sides, one would have to readjust the entire social structure. It seems to us at the present time that the most direct way is to feed these children. They are not getting enough of the right kind of food. Their daily routine consists, usually, of tea or coffee and bread for breakfast, with a quick lunch of ice cream, pie, cake or something equally indigestible at noon and, at night, a late, hurried and unsuitable dinner.

We know that the provision of adequate school lunches has a practical, definite effect upon the health of the children. Our problem is how to make the school lunches available by extension of the machinery already in existence. It has been said that the children do not like the type of food served, that they will not eat cereal and will not drink milk. This is true, at first, but we have found that after instruction and proper supervision by the nurse, they not only eat it but their mothers show a distinct willingness to find out how the cereal can best be cooked and to give their children the food they need. Some time ago, when I was in Philadelphia, I visited a school in a part of the city where I did not expect to find the children in good condition. I was surprised at their excellent appearance and nutrition and was informed that in this school someone had donated cereal, a fireless cooker and milk and that at eleven o'clock each morning the children were given a bowl of cereal and milk. At first, the school doctor told me, practically none of the children would eat it. Little by little they came to like it and the day I was at the school practically every child not only ate the bowl of cereal and milk but many of them asked for more. The feeding of these children, without any question of charity but simply as a matter of common justice, is a duty of this country at the present time.

DR. CHARLES HENDEE SMITH said: It seems to me that there is no question as to the seriousness of malnutrition; the question is how to attack it. People will have to be educated to the fact that the thin child is not a healthy child. Thinness is not natural to a child. The thin child has less resistance to disease, as a rule, and less reserve fat to fall back upon when he is ill than a well-nourished one. He is constantly kept back by the loss of weight incident to every illness, so that he goes on year after year, always behind, gaining less than he should, and so constantly falling further behind. A child of this sort falls an easy prey to acute illness, and as he grows up is very apt to acquire tuberculosis.

The causes of malnutrition are many. Some children have real though obscure diseases, or abnormal conditions, which must be removed before they can be made to gain. Many of them are already infected with tuberculosis in some part of the body. Others have diseased tonsils or decayed teeth from which they are constantly



absorbing. Some have obstructed nasal passages or adenoids and are unable to get enough air to supply their needs. Children who have heart disease or other illness are often undernourished also, and it is even more important to keep up the nourishment of these children than of those without organic disease.

The great majority of undernourished children are simply showing the results of bad habits of life. Their lives are at fault in so many respects that it is difficult to know where to begin to correct them. This may be illustrated by giving a sample day of such a child. He gets up so late in the morning that he has to hurry off to school without breakfast or with a hastily swallowed cup of coffee and a roll. He has no time for bowel movement. He is in school from nine to twelve, doing mental work on practically an empty stomach. The noon hour is so short that he must hurry home and bolt his mid-day meal. This is commonly of insufficient quantity, improper food and badly cooked. A dish of thin soup with tea and bread, or a fried egg with a doughnut, or merely bread and tea alone are common enough examples of such lunch. The child hurries back to school and attempts to study on this hurriedly eaten indigestible meal. After school he plays violently if out of doors, or in cold weather sits in an overheated kitchen. His evening meal is served at irregular hours and the child is often too tired to eat the food when it is ready. Fried potatoes, fried eggs, fried meat, tea or coffee, pies and pastry make up this evening meal as a rule. If the child is not too tired to eat, this is often the only real food he gets during the day. After this meal he usually goes out on the street or sits in the close gas-lighted rooms until ten, eleven or twelve o'clock before going to bed. It is perfectly evident that no child can gain on such a régime, in which practically every single phase of his daily life is at fault.

It has been shown to be possible to make a thin and weak child grow fat and strong if there is present no serious disease, and if the daily life of the child can be controlled. The men in the medical profession have been doing this with their private patients for years. Nothing repays effort so wonderfully as the results obtained with this kind of child. The last few years have seen a number of attempts to apply more widely the principles which are known to be successful in individual private patients and in controlled groups of children.

The class plan of treatment is the way in which this can be most easily accomplished. Such a class has been conducted by Dr. Emerson in Boston for some years and one has been in existence at the Bellevue Hospital Out-patient Department for over a year. There are also classes at the Post-Graduate, Cornell Dispensary and Bowling Green Neighborhood Association. I can only speak of the Bellevue class. We find that class talks to the mothers and to the children save time and often make a deeper impression than does the same advice when given to individuals. Lectures on foods, cooking, and the advisability of eating slowly, the necessity of rest, fresh air, exercise and cleanliness, are given at frequent intervals. Food exhibits and printed diet lists are used freely. The children

are spurred to try to gain weight by the spirit of competition with each other and by working for prizes. A visiting nurse follows up the patients to the homes and collects the information which often brings out the cause of the child's malnutrition. She repeats the doctor's instructions and adds to them from time to time. It has been found that over two-thirds of the children can be made to gain at two or three times the expected rate for their ages. The one-third of the children who gain at the average rate or less are failures because of extreme poverty, lack of coöperation, ignorance of parents or some one of the diseases, such as tuberculosis, which acts as an additional handicap.

In the endeavor to solve the problem of malnutrition a broad educational campaign must be the main reliance. The people must be taught to think about their food and the expenditure of their money by somewhat the same means that they have been urged to buy Liberty Bonds.

Nutrition classes should be established in all of the out-patient departments in the city, and parents must be educated to take heed of the weight of their children and to take every child to a doctor or a dispensary if his weight is below the average, or if he does not gain at the average annual rate for his age.

School lunches should be extended so that every child who cannot get a decent lunch at home can have an opportunity to get a nourishing mid-day meal at a nominal cost. Such lunches should be really nourishing, and not merely a thin soup, weak cocoa, and uncooked fruit. They should give a child protein-containing food in the form of meat, fish, eggs, puree of peas or beans, or milk, with a starchy vegetable or cereal, green vegetable, and some cooked fruit. The educational effect of such meals on the child would be most valuable. Parents must be educated to give proper food, well cooked and in sufficient amounts. With the present price of all food it is more than ever necessary for the poor to spend their money to the best advantage. They must be taught that the bulk cereals, like corn meal and oatmeal, give the most fuel value of any foods; that milk is the cheapest food at any price, and that every growing child must have milk; that margarine and nut-butter are just as nourishing as butter and cost about three-fifths as much; that vegetables are essential, and that tea and coffee are of no nutritive value, and also are actual poisons to growing children. Nearly all families eat too much meat and meat is the most expensive food. Mothers must be taught to cook the food properly. The frying pan is perhaps the greatest single agency of evil in the average kitchen. The present campaign for saving food is excellent and necessary, but more stress might well be laid on the fact that it is possible to buy sufficient nourishing food if the available money is properly spent.

DR. MORRIS STARK said: I just wish to say a few words as to a few children who were made the nucleus of an experiment which was carried out under the direction of the Post-Graduate Hospital and the Association for Improving the Condition of the Poor to see if malnutrition could be helped. These children were examined and classified by all the usual laboratory tests in order to get as correct

data as possible, and then a prescribed lunch, or really a dinner, was given them in the middle of the day under supervision, so that we knew how much food the child actually took, what foods he would take and what he would not take. Then by weekly examinations we were able to ascertain what profit these lunches had been to the children. In following out these experiments interesting data were shown.

One point of importance is that among Hebrew children it is customary to attend school for religious instruction after the regular school hours. These children get out of school at three o'clock and then at four o'clock they go to receive religious instruction and remain until six. They then come home too tired to eat. One intelligent little fellow when questioned as to why he did not eat more, said "I would have more appetite if I did not have to go to school so much." There should be a campaign conducted to influence these religious schools to shorten their hours. Such a campaign should be conducted by the community worker and should not come from an outside source.

DR. ROYAL STORRS HAYNES said: It seems evident from what we have heard that the problem of malnutrition is highly important and is growing more important here and throughout the country. If we look at the experience abroad we realize that we must expect an increase in malnutrition and we are going to need more malnutrition clinics, feeding in schools and various expedients for lessening malnutrition.

We have here a problem which should be met and the question is, "What are we going to do?" We have heard a great deal about the problem but not so much as to how it is to be met. There are a great many pediatricists who feel dissatisfied because our particular training has tended to keep us at our usual work instead of putting us in the service. We have here an opening in this war problem and if we can attack this problem and help in its solution we will be doing a part, if not all, of our duty to our country. As a Section we should take action as to what we shall do in our particular community and if we are successful here we may set an example which other communities will find worth while following. I, therefore, move the appointment of a committee, that shall be to the Section something like the Public Health Committee is to the Academy of Medicine, one that will make an investigation of this problem and act in an advisory capacity; and that it shall consist of the number of members that the Chairman of the Section shall decide. The functions of this committee shall be to make an investigation of the field, to cooperate with other agencies working along this line, and to keep informed as to what each man can do and to let us know what may be done in the solution of this problem.

DR. ROWLAND G. FREEMAN.—While the figures of Dr. Chapin's seem grave it is probable that the trouble is rather an ignorance of food values than simple poverty. There is little unemployment and wages are good, and while the cost of food has increased considerably sufficient calories may be purchased at little cost, for instance 2500 calories of oatmeal cost only 9½ cents, and of hominy only



15 cents. The trouble is that people do not know the nutrient value of different foods nor the necessity for a balanced ration and sufficient bulk.

Dr. E. K. Dunham has devised perhaps the best method of representing food values in plaster casts made in imitation of bread, butter, cheese, vegetables and fruits, each representing 100 calories. This gives a concrete illustration of comparative food values, and if such casts could be shown in popular lectures with instruction about food balance and the necessity for food bulk, much underfeeding and defective feeding could be corrected.

DR. JAMES PORTER FISKE said: I do not think any one can object to acting along the lines indicated and I think a nation-wide spirit should be aroused without maintaining that any real hardship is impending. One can go back to the Civil War and see the result of malnutrition following that period, and we can find a very effective lesson in the large percentage of rejections among recruits, there being some 30 or 40 per cent. rejected because of physical unfitness. Of these about 16 per cent. are rejected because of underweight and these men are treated rather liberally. The men who are slightly underweight are sent to cantonments if there is any prospect that they will pick up and come up to the required weight after training and attention to their condition. A considerable proportion of the cases of malnutrition are no doubt due to other faults in hygiene than underfeeding. The cause of malnutrition is not alone a lack of food but ignorance in prescribing and choosing food and other errors of hygiene. I think that as an argument to show the need of more attention to the subject of proper nutrition and better hygiene we may use with advantage the large number of rejections among recruits and this can be done without exciting alarm as to an actual scarcity of food.

DR. JACOB SOBEL said: There is no doubt that we need an answer to the question as to what is to be done to solve the problem of malnutrition. In addition to one of the means that has been suggested, the school lunches, the Bureau of Child Hygiene of the Department of Health exercised special foresight when it organized cooking classes at the fifty-nine Baby Health Stations the object of which is to instruct mothers in the purchase, preservation, care, and preparation of food and the ways of adapting it to the needs of the growing child. In carrying out this plan attention has been given to the needs of the locality and the racial needs. It is not easy to take a racial group with its ingrained customs in respect to food and adjust it to the conditions as they exist to-day. We cannot make them like foods over night. We have found, however, that one of the best methods of giving instruction has been in these diet classes. In doing this work we have had coöperation from various sources. We have tried to teach people to adjust themselves to the present conditions, how to prepare food and how to establish a family budget and to show them how a dollar may be made to purchase the largest amount of food at the greatest value.

One line I would like to see taken up was emphasized by Dr.



La Fetra recently and that is that malnutrition is not a matter of food *per se*, but of other factors, fresh air, proper rest, and of a quiet mental attitude. It is my belief that there should be an increase in the time allotted for the midday lunch. One hour is not sufficient, because the greatest part of the lunch hour is used in going and coming from school. The child does not get away from school until some minutes after twelve o'clock and he tries to get back by twenty-five minutes of one and there is insufficient time left for him to eat his lunch properly. I think we should lengthen the noon school lunch hour if we hope to see an improvement in the nutrition of school children. Dr. Chapin's idea of a good midday meal is important but the child should have time in which to eat the meal.

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## BRIEF OF CURRENT LITERATURE.

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### DISEASES OF CHILDREN.

**Status Lymphaticus.**—H. C. Cameron (*Proc. Roy. Soc. Med.*, Sect. Study Dis. Child., 1917, x, 133) suggests that the lymphoid overgrowth so commonly found postmortem in children is no more than an enlargement from the irritation of chronic catarrh in the corresponding mucous membranes. Such children during life show evidence of faulty nutrition or infection of all epithelial structures, hair, skin, teeth, conjunctiva, and the mucous membranes of respiratory and intestinal tracts. There is usually present a characteristic wateriness of the tissues, which is dependent to some extent upon excessive carbohydrate feeding, which is a main cause of the vulnerability to infection. Local treatment of the catarrhs alone is likely to be inefficacious, and must be accompanied by a systematic attempt to bring about the process of dehydration and improve the nutrition of the tissues. The status catarrhalis in the sense defined is a predisposing cause of rheumatism and tuberculosis, and carries with it a liability to sudden death at the onset of virulent infections, such as pneumococcal infections, measles, or diphtheria.

**Physiology of the New-born Infant.**—Defining basal metabolism as the energy production of an infant in complete muscular repose, and the respiratory quotient as the volume of carbon dioxide expired divided by the volume of oxygen used. F. B. Talbot (*Amer. Jour. Dis. Child.*, 1917, xiii, 487) says that the respiratory quotients of new-born infants indicate that the supply of glycogen in the body is quickly used up, and that the energy is obtained in large part from the body fat until the breast milk "comes in." The energy requirements of new-born infants are smaller per unit of body weight than in older infants. The total calories of the basal metabolism of a new-born infant may be calculated from the following formula:

Total calories = length  $\times$  12.65  $\times$  body surface.

Chilling from exposure or a water bath depresses the metabolism and with it all the body functions. A new-born infant should not

be bathed in water, and great care should be taken that it is not chilled. Warm oil should be used to clean the body. Since a newborn infant is starved until the breast milk "comes in," weak or premature infants should be fed shortly after birth, preferably with the milk of another woman; but when this is lacking, a 5 per cent. solution of some sugar such as lactose should be given as a temporary expedient.

**Postoperative Acid Intoxication.**—In an effort to cast light upon the subject of postoperative acid intoxication, P. C. Jeans and M. R. Johnston (*Amer. Jour. Dis. Child.*, 1917, xiv, 57) studied 22 consecutive operative cases. The acetone bodies of the blood were somewhat increased after operation in about two-thirds of the children studied, the maximum amount being found in most instances about twenty-four hours after operation. The plasma carbonate was reduced in about two-thirds of the cases, the greatest reduction occurring in most instances about twenty-four hours after operation. There was found to be no close relation between the increase of acetone bodies and the reduction of plasma carbonate. In most instances, especially in those cases in which the plasma carbonate was much reduced, the acetone bodies were entirely inadequate to account for the degree of reduction of plasma carbonate. The undetermined acid factor was apparently of much greater importance than the acetone bodies in the reduction of reserve alkali. The starvation incident to operation seems to play no part in the production of this undetermined factor.

**Specific Early Treatment of Acute Anterior Poliomyelitis.**—H. Ulrich (*Bost. Med. & Surg. Jour.*, 1917, clxxvii, 78) records the methods of treatment of 120 cases of acute anterior poliomyelitis. Group I was treated with three intraspinal injections of immune serum; Group II was treated similarly with normal serum; cases of Group III were injected with their own spinal fluids; Group IV comprised cases on which the effect of simple withdrawal of spinal fluid was tested; Group V received no specific treatment; Group VI includes cases of which one was of doubtful diagnosis, one died of pneumonia, and the others were moribund on admission. Not only must the various measures employed in this study be looked upon as useless, at least after the onset of paralysis, but the manipulation necessarily attendant upon lumbar puncture causes great pain, and would seem to be permanently harmful in view of the great need of rest during the early stage of the disease.

**Standardization and Administration of Antimeningococcic Serum.**—H. L. Amoss (*Jour. A. M. A.*, 1917, lxi, 1137) advocates standardization of antimeningococcic serums. He says that while the temperature remains high and meningococci are still present in the cerebrospinal fluid, injections every twelve hours, except in very young babies, should be resorted to unless clinical indications to the contrary exist. The next interval between injections should be twenty-four hours, then forty-eight hours. Subsidence of high temperature, clearing of cerebrospinal fluid with disappearance of the meningococcus, and general improvement in the condition of the

patient, are the indexes for moderating the energy of the treatment. In order to distribute the serum over the surface of the brain and into the lateral ventricles after the intraspinal injection, the foot of the bed should be raised from 8 to 12 inches and kept so for six hours if possible. Sometimes the headache resulting from this position may make it expedient to return the bed to the normal position. At the end of six hours, the foot of the bed is lowered to its original position, and the other end raised until the time for the next lumbar puncture. During this time, the turbid fluid or pus is collected in the lower part of the spinal canal to be drawn off at the next puncture. In addition to treating all cases by intraspinal injection of the serum, it is advisable to administer one or more doses intravenously in fulminant or very severe cases, or cases in which there are numerous skin hemorrhages. The quantity thus injected should be from 50 to 100 c.c., depending on the age of the patient and the severity of the infection.

**Poliomyelitis.**—C. Ogilvy (*Jour. A. M. A.*, 1917, lxi, 691) says that we are unable to prognosticate regarding the subsequent severity of the paralysis, either by the acuteness of the febrile stage or any laboratory findings thus far submitted. When death occurs, it takes place with few exceptions during the first few days following the acute onset. Treatment outdoors during the convalescent stage is most beneficial. Immunized serum treatment has not proved efficient. Although there is nothing to disprove the possibility of an insect carrier, the evidence submitted would sustain the assumption that poliomyelitis is a contagious disease. Although muscle testing by balance weight is applicable in only a small percentage of the patients, in these patients it is of much value. Continuous supervision is most important. Continued electrical treatment is not essential for the recovery of lost muscle function. Bath exercises in relation to muscle training form one of the most practical and useful lines of treatment that can be followed out. Complete rest extending over six months is one of the most important factors in obtaining perfect return of function. Overfatigue is of the greatest detriment to improvement, and is most difficult to guard against. Braces should be made as light as possible and should be supplied immediately when body weight-bearing tends to produce strain or deformity. The percentage of paralyzed and nonparalyzed patients in an epidemic may be expected to be about 58 per cent. paralyzed, or, excluding those who died, 49 per cent. paralyzed.

**Treatment of Anterior Poliomyelitis.**—S. W. Boorstein (*Jour. A. M. A.*, 1917, lxi, 696) states that in light massage and muscle training, we have all the facilities for improving these patients without resorting to electricity. It is easier to get the assistance of the mothers when electricity is not used than when it is. The benefit derived from proper use of braces far outweighs the atrophy which it produces. They are especially useful in deltoid paralysis. Braces should be discontinued as early as possible. If proper orthopedic treatments are carried out, there will be marked improvement within



a short time, and deformities will be prevented. The earlier the children begin to walk, the quicker they improve, provided, of course, they do not use the limbs excessively.

E. D. Ebricht (*Jour. A. M. A.*, 1917, lxix, 694) emphasizes particularly the fact that treatment of the acute stage should have in view the bringing about of a condition of motor cell rest. All treatment of weakened or paralyzed muscles, in whatever part of the body they may be, should be based on the law that a stretched muscle will not regain its tone, and methods and appliances used that will keep the muscles in a position of constant relaxation.

**Application of Macroscopic Slide Agglutination in Search for Meningococcus Carriers.**—In the methods we employ for typhoid-paratyphoid identification of suspected colonies from feces, the use of the macroscopic slide agglutination has been such a time-saving procedure that C. Krumwiede (*Jour. A. M. A.*, 1917, lxix, 358) was led to try this method with meningococcus colonies. Two serums tested with a 1:10 dilution of normal horse serum as a control and a 1:10 dilution of the immune serums for agglutination, gave immediate agglutination with over sixty strains. Fairly good results were obtained with a dilution of 1:25, although with some strains the size of the clumps was lessened and some delay in the reaction resulted. The dilution applicable would have to be determined for each serum by testing it against a series of representative strains. The method is to place a row of small drops of the dilution of the normal horse serum and another row of drops of the dilution of the immune serum, on a slide. The growth from the suspected colony or a trace from slant mediums is then taken up with a small loop and rubbed first in the normal and then in the immune serum without burning the loop between, till sufficient growth is rubbed off to give a slight turbidity. The reaction in the immune serum is evidenced by the immediate or prompt development of plain visible clumps. The applicability of the slide reaction as well as its value as a final identification method can be determined only in actual practice.

**Method of Agglutination of Meningococci.**—The following simple and rapid method for differentiating by agglutination the meningococcus from other Gram-negative cocci grown from the nasopharynx of meningitis patients and contacts is described by R. Tunncliffe (*Jour. A. M. A.*, 1917, lxix, 786). Equal parts of horse serum, normal or antimeningitic, whole human blood in sodium citrate solution (1 part to 2 parts of 2 per cent. sodium citrate in salt solution), and a suspension of organisms are incubated ten minutes, smeared on a glass slide, stained and examined microscopically. In the mixture with normal horse serum there is, as a rule, very little or no clumping of the meningococcus, while in the one containing antimeningitic serum there is decided agglutination. In the event that cultures of organisms, meningococci or otherwise, should be agglutinated in mixtures with normal horse serum, it would be necessary to use dilutions of the serum, normal as well as immune, in order to bring out the specific agglutinins of the immune serum.



In many cases, agglutination of the meningococcus occurs in the immune serum without the presence of human blood, but the blood gives a better staining specimen and appears to promote agglutination. About 1 drop of serum is drawn into a bent capillary pipet, the upper end of the column marked with a pencil, and then drawn up to admit an air bubble; next an equal amount of citrated blood is aspirated; when a sufficient number of pipets has been prepared in this way, the bacterial suspensions are made, and of each suspension the amount already indicated on the pipet is drawn into each of two pipets, one with normal horse serum and one with antimeningitic serum. Now the contents of the pipets are mixed in the bend, and after an incubation of ten minutes at 36 C. (or room temperature for twenty minutes), the contents are gently mixed again and blown out on a glass slide, spread with cigarette paper and, when dry, stained unfixed with carbolthionin, or fixed with heat and stained with methylene blue. About ten cultures can be examined in one hour, which is less time than it takes to make the macroscopic agglutination test. If the original colonies on the plates are separate, suspensions can be made with them and the organisms differentiated as early as sixteen hours after the original cultures have been made. If subcultures are used for the suspensions, the diagnosis is made twenty-four hours later; in any case, twenty-four hours may be saved, and often forty-eight, as compared with the macroscopic method.

**Premeningitic Rash of Cerebrospinal Fever.**—Various observers have noted that there may be an erythematous rash in cerebrospinal fever. C. P. Symonds (*Lancet*, 1917, cxcii, 86) has seen it in three of fifty cases. It was in each instance observed very early after the onset, and before there were any symptoms of meningitis to suggest the diagnosis. These cases tend to confirm the hypothesis that there is a septicemic stage in cerebrospinal fever which precedes the meningitis.

**Perleche.**—J. E. Lane (*Jour. A. M. A.*, 1917, lxix, 192) describes perleche as preëminently a disease of infancy and childhood. It is an affection of the labial commissures, almost always bilateral, and usually rather closely limited to the commissures. At the beginning of the disease the epithelium is smooth and whitish, with a mother of pearl tinge. As it progresses the epithelium becomes macerated, a little thickened, and loses most of the mother of pearl color. Small transverse fissures appear, which show a red base, if the lips are stretched, but which do not reach the lower layers of the epidermis, and which do not bleed readily if rubbed. In some cases there is slight erosion, but the surface is ordinarily not denuded. If left to itself there is usually spontaneous cure in a month or so unless there is reinfection, but in some cases it is of indefinite duration. In the mild cases of perleche there are no symptoms at all. In the fully developed cases there is a slight feeling of irritation which causes the child to continually run the tongue over the lesions. The streptococcus is probably the causal agent. Nothing except syphilis could seriously be considered in

making a differential diagnosis. Prompt cure is effected by painting the lesions daily or every other day with a 10 per cent. solution of silver nitrate, a diluted tincture of iodine, and the copper sulphate or the alum pencil.

**Indications For and Dangers of Tonsillectomy.**—J. B. Wood (*Amer. Jour. Med. Sci.*, 1917, cliv, 188) writes that theoretically, the indications for the removal of the faucial tonsils may be divided into two classes: (1) those in which the tonsils are responsible for local disturbances, and (2) those in which the tonsils act as a gateway of entrance for a systemic infection. An acute inflammation of unusually large tonsils may bring about serious interference with respiration. It is advisable, under these circumstances, to remove one or both of the tonsils rather than to do a tracheotomy. Patients suffering from repeated attacks of suppurative tonsillitis or those who have recently had one or more attacks of peritonsillar abscess, should have their tonsils removed. If any of the tonsillar attacks are followed by infectious processes in other portions of the body, localized or general, surgical interference becomes all the more imperative. Tonsillar enlargement is not necessarily an indication for operation unless the extent of hypertrophy is extreme, giving rise to obstructive symptoms. The occurrence of large masses of accumulated debris in the tonsillar crypts often calls for tonsillectomy, but this condition is frequently found in normal healthy individuals with the production of little or no distress except perhaps for a slight local discomfort. If there is a history of arthritis or other constitutional disturbance following directly upon tonsillar inflammation, and the crypts of the tonsils contain large quantities of cheesy debris, with enlargement of the tonsillar lymph nodes, the responsibility of the tonsils would be practically established. The decision to operate must often be determined by excluding other sources of infection. Considerable help can often be had by taking cultures from the crypts of the tonsil. In cases of arthritis deformans, of recurrent attacks of acute rheumatoid arthritis, or some equally severe general infection, if any suspicion, no matter how small, can be placed upon the tonsils the patient should be given the benefit of the doubt and complete enucleation carried out. It is the severity of the general condition that warrants our interference and placing the patient under a certain amount of surgical risk. In children, general narcosis is always advisable, and ether given by the open method is the safest anesthetic to use. The nitrous oxide-ether sequence is advisable in adults, but it is not safe in children. The use of chloroform in tonsillar operations is absolutely unjustifiable. Acidosis due to a general anesthetic follows more often after chloroform than after ether. A slight degree of acetonuria is not an uncommon condition following ether anesthesia. It is transient and not accompanied by any severe symptoms. Vomiting, however, is usually prolonged and recovery is somewhat delayed. Usually the blood supply of the tonsil comes through several small arteries, so that bleeding from this source is unimportant. In the healthy individual it is doubtful

whether death will ever occur from hemorrhage when the bleeding comes from such vessels; but it is possible for the large vessels of the neck to be wounded during a tonsillar operation, the most frequent anomaly being a tortuous internal carotid. While quite often a mild degree of infection of the tonsillar wound follows the operative attack in this region, comparatively few severe infections occur. Cases of fatal septicemia have, however, been reported. Abscess of the lung following tonsillectomy is rare in children. One of the more serious complications following as a direct result of postoperative infection is involvement of the ear through the Eustachian tubes. Middle-ear suppuration sometimes occurs and may lead to mastoid involvement. A temporary congestion of the drum with a considerable amount of earache is more frequent, but usually clears up within a few days without leaving any serious results. The chief factor in the production of sepsis of the throat following tonsil operations is excessive trauma, and next to this pyorrhea or other septic conditions of the teeth and gums. If one operates during an attack of acute infection of the upper respiratory tract he runs a distinct risk of infecting the wound. Deformity of the tonsillar pillars and the soft palate not infrequently follow the tonsil operation, and is usually dependent upon faulty technic on the part of the operator. It is very rare for a permanent vocal or other loss of function to occur as the result of a tonsillar operation. Temporary paralysis of the soft palate either due to a stretching of the muscles or to edema and inflammatory infiltration may give rise to peculiarities of voice for the time being, and may even be so bad as to permit of a certain amount of nasal regurgitation during swallowing; but these are transient conditions.

**Diagnosis of Tuberculosis in Children.**—To obtain data helpful in diagnosis, H. D. Chadwick and R. Morgan (*Bost. Med. & Surg. Jour.*, 1917, clxxvii, 138) analyzed the histories of nearly two hundred tuberculous children. To summarize the essentials for a minimum standard necessary in the diagnosis of tuberculosis in children, they emphasize the importance of symptoms indicating tuberculin absorption, namely: weakness, undue fatigue, fever, poor appetite, failure to gain, or loss of weight, and nervous irritability. The local symptoms are cough, hoarseness and occasionally streaked sputum. The usual physical signs are dullness in the interscapular region radiating into the apices at the back, frequently not elicited in front. There may or may not be changes in the respiratory sounds. Râles may or may not be present. Symptoms both constitutional and local, together with a history of exposure, are to be given greater weight in making a diagnosis of active tuberculosis than the presence or absence of physical signs. Percussion is more important than auscultation. A thickened area in the lung or region of the bronchial glands does not in itself mean active tuberculosis. It may be a healed lesion that needs no treatment. It may also be caused by other diseases than tuberculosis.

**Treatment of the Toxemia of Common Infections in Children by Intravenous Injection of Eusol.**—For intravenous injection



J. L. Smith, J. Ritchie and T. Rettie (*Edinb. Med. Jour.*, 1917, N. S. xix, 143) have recommended the use of standard eusol, 1 c.c. of which is equivalent to 1 c.c.  $\frac{1}{10}$  normal sodium arsenite solution. The cases treated include infections with the ordinary pyemic organisms, the meningococcus, the tubercle bacillus, and the virus of rheumatism. No beneficial effect was produced in cases of tuberculosis or rheumatism; further observations are necessary in respect of these conditions. Beneficial effect was produced in infections with the ordinary pyogenic cocci, and this was usually observed immediately after the injection. In a few cases where the nature of the infection was not determined, as in the case of toxic diarrhea, a similar result was obtained. When eusol is cautiously administered no untoward effects follow. In only one case in the series symptoms of cardiac disturbance were observed, and in this the record notes that the eusol was injected too rapidly. The results recorded go to prove that in certain cases the toxic symptoms of common infections yield to this treatment no less than those following the more definite toxemias of wound infection and gas gangrene. The writers give directions for the preparation and administration of the solution.

**Juxta-articular Bone Lesions of the Hip.**—H. L. Taylor and G. Barrie (*Jour. A. M. A.*, 1917, lxix, 1227) state that local bone osteolysis may cause a light spot in the neck or trochanteric region on the röntgen plate. This may be due (a) to hemorrhagic osteomyelitis, which is a benign process usually running a chronic course with mild symptoms, notably lameness, and frequently ending in recovery, sometimes with and sometimes without an operation; pus is never present; or (b) to a bone abscess with the formation of pus, which may run an insidious course with mild symptoms, or a more acute course with severer symptoms, and if evacuated and drained, usually ends in recovery with good function. Both classes of cases are often diagnosed as hip tuberculosis and sometimes as sarcoma. An early correct diagnosis enables the surgeon to simplify the treatment and save the adjacent joint by a timely operation, when its integrity is threatened. In the cases due to hemorrhagic osteomyelitis mild curettage and the introduction of bone chips stimulate osteogenesis, and the result is usually perfect or nearly perfect restitution of structure and function. General hygienic management and a reasonable curtailment of activity, and short periods of splinting and recumbency when indicated, are effective in the milder cases without operation. In cases resulting from bone abscess the invariable treatment is to open the bone and evacuate, scrape out and disinfect the abscess. The cavity should be wiped out with tincture of iodine, drained, and allowed to granulate from the bottom. Such cases do not always heal at once, but many heal in a short time, and most of them do so after a few weeks or months, while the pain and disability are quickly relieved.

**Giant Duodenum.**—A case of this rare condition occurring in a boy four and a half years old is reported by W. A. Downes (*Annals Surg.*, 1917, lxvi, 436). The symptoms and physical signs of im-



portance were periodic attacks of vomiting, diarrhea alternating with constipation, epigastric distention, and a peculiar form of peristaltic waves situated to the right of the median line running from above downward and below upward. Belching of large quantities of sour-smelling gas, and the return from the lavage which would at first be clear, followed later by partly digested food—known to have been taken days before—indicated the presence of a pouch-like formation either in the stomach or duodenum. Röntgen examination showed the contour of a normal stomach and an enormously dilated pouch, occupying the usual position of the duodenum. Temporary improvement followed posterior gastroenterostomy and occlusion of the pylorus by a silk ligature. The duodenum was found to be dilated to the size of the stomach but the nature of the stenosis and its cause were not discovered. Symptoms recurred and six weeks later the abdomen was reopened. The ligature was seen to have partially cut through the pylorus whose lumen had become reestablished. It was then completely divided and recovery gradually took place. The writer believes that duodenojejunostomy would best meet the indications in a similar case.

**Congenital Persistent Acroasphyxia in Infants.**—N. Toomey (*Amer. Jour. Med. Sci.*, 1917, cliv, 500) records two cases of acroasphyxia (acrocyanosis), a local vasomotor disturbance usually symmetrical and confined to the extremities. Its pathogenesis is not known, but it is much like Raynaud's disease, of which it may be a form. About thirty-five cases have been reported. An hypertrophic form (edematous) and a hypesthetic form are usually recognized, but hypesthesia and hypertrophy may be absent. The disease occurs most frequently in girls and young women. These cases are the youngest reported. The disease has no hereditary basis, but several cases have been reported in hysterical individuals. The condition is said to be made worse by local chilling and possibly by fatigue and dampness. The course of the disease consists of a gradually developing asphyxia which may be persistent or alternate with ischemia or active hyperemia. Gangrene occasionally results. Edema and possibly hypesthesia are probably secondary to the altered local metabolism produced by the cyanosis. In the first case the condition was noticed in the second week; in the other, on the second day after birth.

**Oatmeal Gruel in Infant Feeding.**—A. Levinson (*Arch. Pediat.*, 1917, xxxiv, 707) considers oats an important addition to infant food, the most valuable preparation being oatmeal gruel. The 5 per cent. solution is best. It can be prepared very simply by washing grits in cold water and boiling for thirty minutes and then straining. Gruel can be given at any age with beneficial results. Its taking increases the appetite of the child. It makes the stool homogeneous and often relieves constipation. It has high iron content. The gruel, prepared in the above way, contains 15.671 grams dry substance in 1000 grams. The caloric value of 1000 grams is 54 calories.

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## ORIGINAL COMMUNICATIONS.

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THE WOMAN'S HOSPITAL IN THE STATE OF NEW YORK.  
FOUNDED IN 1855.

AN HISTORICAL SKETCH.

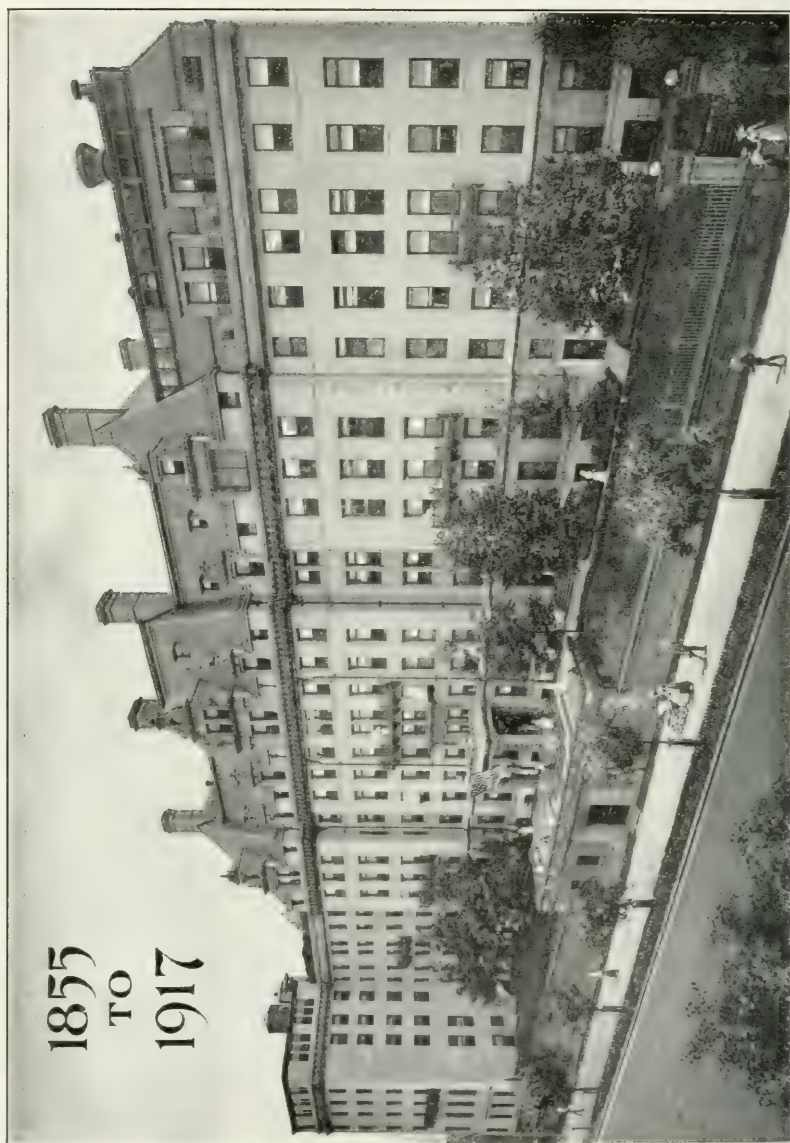
BY

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THE WOMAN'S HOSPITAL has the distinction of being the first institution of its kind in the world founded by women for the exclusive use of women. This refers to the financial foundation and the attendant personal supervision that characterized its management during its infancy, and has continued from that time when Mrs. Doremus, she of fond and illustrious memory, went daily out of her home before breakfast and purchased the hospital supplies. As has been said "Heeding neither day nor night, nor storm nor sunshine, nor height nor depth, they stayed neither hand nor foot," until the object was accomplished in the establishment of the hospital and its development to its present standing and importance.

It must not be forgotten, however, that the hospital had its inception in the inspiration and genius of one man, Dr. J. Marion Sims. In the words of Dr. D. B. St. John Roosa, "In this Woman's Hospital there is the everlasting sign and signature of an epoch-making discovery by an American whose name will be known as long as the English language shall be spoken—as long as grass grows and water runs—J. Marion Sims." As Marion Sims is recognized as the father of gynecology, so may the Woman's Hospital in the State of New York be fittingly termed its birthplace.



1855  
TO  
1917

THE WOMAN'S HOSPITAL, NEW YORK CITY. GENERAL VIEW FROM CATHEDRAL PARKWAY.



Although the hospital was established primarily for the relief of a certain condition—vesicovaginal fistula—it early became the seat of instruction in gynecology for the medical profession, not only of America, but of the entire world. All the lesions of childbirth and their complications were here incidentally presented for observation and study; various operations were invented for their relief and were standardized. The hospital thereby became the foremost influence throughout the world in developing and establishing the great surgical specialty of gynecology. This is conspicuously demonstrated in the fact that the impulse given by the Woman's Hospital encouraged the general hospitals and dispensaries everywhere to establish separate gynecological services and the medical schools to found professorships of gynecology. Among the first physicians to fill chairs of gynecology in this country were surgeons of the Woman's Hospital, viz.: Dr. T. Gaillard Thomas at the College of Physicians and Surgeons, Columbia University, and Dr. C. Randolph Peaslee at Dartmouth College.

The early history of the hospital reads like a romance, although punctuated by many tragic moments. At that time the obstetrical forceps were practically unknown, at least were not in general use. Therefore in many instances a woman was obliged to deliver herself after long and difficult labor. In these cases the child's head became jammed in the pelvis, with the bladder pressed against the symphysis for sufficiently prolonged periods to cause necrosis of the base of the bladder, attended later with sloughing of the tissues and the production of a vesicovaginal fistula, causing a constant leakage of the urine. Every community had within its borders one or more of these pitiable cases, the patient being practically excluded, not only from society at large, but in many instances, from her immediate family—a sad and pitiable lot.

Efforts had been made by surgeons everywhere to relieve this condition but with discouraging results. No operation, based on surgical principles, had been devised which could be trusted to prove successful. Dr. J. Marion Sims, of Montgomery, Alabama, undertook the investigation of this pathological condition and its relief. Filled with enthusiasm and feeling sure of success, he built a private hospital, collected all the cases he could find in the country round about him (mostly negro slaves), kept them at his own expense, and began a regular series of scientific experiments, founded on physiological and pathological laws. His operations failed; he was disappointed but not disheartened. He toiled nearly four years (expending a large portion of his private means) before a single case was



cured. He operated upward of forty times on three patients and twenty-one times on one of them, during these experiments. One obstacle, and then another, and another, was gradually overcome, when the first great operation was finally perfected in March, 1849. He brought the operation to such a degree of perfection as well as the instruments which he invented, that it still remains to-day an ideal procedure. But constant mental tension, great responsibility, and daily toil, had now undermined his health, and he was obliged to seek change of climate and a higher latitude. Hence his location in New York.

Before coming to this city he had published his great discovery to the world in the *American Journal of the Medical Sciences*, illustrated with all the wood-cuts necessary to make it clearly understood and a report of six successful cases. Of no mean reputation as a surgeon before, this established his surgical power, and, as a consequence, he was warmly welcomed to New York by the whole medical profession. Our illustrious Mott was the first to recognize him and the eminent Stevens the foremost to suggest to him the propriety of laying his views before the medical profession of this city on the necessity of organizing a Woman's Hospital. This plan was adopted, and on the memorable 18th of May, 1854, in the Stuyvesant Institute, Dr. Sims delivered an elaborate and lucid lecture on the novel and important principles involved in the cure of vesicovaginal fistula. The profession then and there took the matter into their own hands and appointed a committee of organization.

With the endorsement of the whole profession and under the special direction of this committee, Dr. Sims was sent to the prominent women of New York as an emissary to plead the cause of woman. "He visited the wives and mothers of New York City. He laid the sorrows of suffering woman before them; they heard, they sympathized, they spoke, and lo! the Woman's Hospital sprang into existence."

On the 10th of February, 1855, some thirty New York ladies met in a quiet parlor in St. Mark's Place, there to listen to a proposal and accept a constitution calling into being a new charitable institution to be known as the Woman's Hospital, and its organizers as the Woman's Hospital Association. Organization and incorporation soon followed.

A house was rented at the corner of Madison Avenue and 29th Street and modestly fitted up. On the 4th of May, 1855, the hospital was opened, having J. Marion Sims, Resident Surgeon, with the following consulting board. Consulting Surgeons: Alexander H.

Stevens, M. D., Valentine Mott, M. D.; Consulting Physicians: Edward W. Delafield, M. D., John W. Francis, M. D., Horace Green, M. D. Two "matrons" one to attend to the domestic concerns and the other to administer under the surgeon's orders to the sick, and a nurse completed the officers of the hospital.

The hospital contained forty beds, was comfortably furnished throughout and everything necessary or desirable, as understood in those days, was liberally provided. To the poor the beds in the wards and all that the hospital offered were free. Those occupying separate rooms were charged varying amounts, according to the size and location of the room.

The Woman's Hospital has never professed as its first aim to be an unrestricted charity but rather a well-directed benevolence, although the element of pure charity is by no means omitted. In pursuing its even course of benevolence it has sought to provide accommodations for all classes, the extremely poor, the educated and refined without means to command luxuries but whose sense of justice insisted upon moderate payment, and finally for the most fastidious and wealthy. No woman need fail of opportunity for relief.

Patients came in constantly increasing numbers from all parts of the country and the success attending the surgical work was most surprising. "The early days of the hospital were like the days of miracles, when woman came with her infirmity and was healed."

At the first anniversary meeting held February 9, 1856, less than one year after the opening of the hospital, the Executive Committee was able to report that sixty patients had been received, twenty-one of whom had been discharged perfectly cured, and that all the patients still remaining in the hospital (with one exception) were pronounced by the resident surgeon curable. Nor was this all, for the outdoor patients had exceeded in number the inmates and had been prepared by treatment for the operations to follow.

Through many trials, tribulations and financial discouragements the hospital was continued through the Civil War. A block of land bounded by Park and Lexington Avenues and 49th and 50th Streets was donated by the city, and a building was constructed and opened for patients October 12, 1867. It had accommodations for seventy-five patients, nurses, resident house staff, operating room, superintendent and administration officers. On September 17, 1877, a second building similar to the first was completed and opened for patients. These increased accommodations and improved facilities afforded more ample and satisfactory scope for surgical work and investigation. And here the work of the hospital was continued

till 1902, when the property was sold and the hospital temporarily closed. The new building now occupied was opened for patients December 5, 1906, after an interregnum of four years.

#### THE HOSPITAL AS A TEACHING INSTITUTION.

The primary motive of the prominent medical men of New York in rallying to the establishment of the Woman's Hospital was to afford an opportunity to Dr. Sims to teach the profession how to perform his operation. Underlying this, of course, was the ultimate object of thereby extending as widely as possible the application of the operation for the relief of suffering woman. Dr. Sims and Dr. Emmet were in cordial sympathy with this idea and afforded, from the first, every opportunity to the profession to witness their work. At the laying of the cornerstone of the first hospital pavilion Mr. James W. Beekman, President of the Board of Governors, said: "To practise and to teach this surgical discovery, the cure of vesicovaginal fistula—is the object of our hospital." Indeed in the Acts of Incorporation, Section IX, we find: "All the professors and matriculated students of any regular medical college in the State, and all other members of the medical profession and students of medicine may be admitted to the privilege of visiting said hospital under such equal regulations as may be prescribed by the Board of Governors. The primary object of the hospital is the direct relief of suffering humanity; the second object is the extension of this relief to the widest possible degree by using it as a school of practical instruction of the medical profession."

As rapidly as space could be provided the surgeons from far and near crowded in from three to four hundred per year, to witness the operations. The attending surgeons have consistently adhered to this practice of welcoming members of the profession to the hospital and affording opportunity for scrutinizing its work in every department. In the operating rooms the perfecting of the technic of supravaginal hysterectomy, the repair of the pelvic floor, and kidney surgery have been objects of united effort on the part of the staff. The study of the causative factors involved in procidentia, cystocele and rectocele and the more recent operations presented for relief have been subjects of careful investigation and original operative procedures. To stimulate team work, a combination of pathological and clinical conferences has been organized. The work of the laboratory and the operating room is thus coördinated and made reciprocally valuable. Interesting and instructive cases are brought in from the

wards of the hospital. At a recent meeting the surprisingly satisfactory results of the Carel-Dakin treatment of infected wounds was demonstrated in a case of infected wound of the abdominal wall following operation.

These conferences are held every Thursday at 4 P. M. in the lecture room of the pathological laboratory and are attended by all the surgical staff of the hospital. Members of the profession are cordially welcomed.

It may be asked what concrete things have the surgeons of the Woman's Hospital contributed to the Science and Art of Surgery. The men who laid the foundation of the Woman's Hospital and established its fame were pioneers in a field of discovery where unexplored problems of pathology had to be solved, maps drawn to prevent losing the way and tools invented with which to do the work.

Sims was the genius, the man of vision, of undaunted courage and determination and overflowing with inspiration. He had the quality of mind that brushed aside detail and led at once to the crucial point of the problem at hand. While circumstances led him to devote his life work to a specialty, his vision embraced the entire field of surgery. As early as 1847 he wrote his original observations on *trismus nascentium*. The first child with this trouble to which he was called died and with true scientific instinct he insisted upon and held a postmortem. He found the cranial bones overlapping, and making mechanical pressure on the brain and a clot of blood due to extravasation between the spinal cord and its membranes.

On his own initiative without knowledge of previous invasion of the field by any operator, he performed the operation of cholecystotomy successfully, reported it and advocated the procedure. Later it developed that he had been preceded in this by Dr. Robb of Indiana by a few months. He was the foremost man in the world to advocate in the face of the opposition of the greatest general surgeons of Europe and America, the prompt opening of the abdominal cavity for gunshot wounds of the abdomen. This is of historic interest as it occurred in the conduct of the case of our lamented President Garfield.

Under such a leader all the problems attending the lesions of childbirth and the disease of the female generative organs were studied *ab initio* and methods of cure devised. Sims' undying fame will undoubtedly rest upon his great original work in the field of vesico- and rectovaginal fistula and the founding and establishing of the Woman's Hospital, the birthplace of surgical gynecology.



DR. THOMAS ADDIS EMMET was early associated with Sims as his faithful student and coadjutor. Later he became an original investigator and contributed to the advancement of the specialty. Dr. Emmet was the first to recognize in all its contorted manifestations of infected tissue, the lesion known as lacerated cervix uteri. He devised ways and means of reducing these deformities to recognizable traumatic lesions and originated and perfected an operation for restoration to normal form and condition. He first conceived and devised the hot-water treatment of pelvic congestions and inflammations and elaborated the scheme of application that is now used throughout the world. What woman is there in the civilized world that does not have her douche bag conveniently hanging behind the bathroom door? In connection with this was the application of the medicated vaginal tampon—a universal treatment for certain conditions. The repair of the lacerated pelvic floor as a recognized important or imperative procedure was first suggested by Emmet and an operation devised to meet the infirmity. Dr. Emmet was a patient, painstaking operator with emphasis on the minutest detail. His special field was plastic surgery.

Dr. Emmet's book, "The Principles and Practice of Gynecology" was awaited with great interest and hailed throughout the surgical world as the dawn of a new day.

DR. T. GAILLARD THOMAS was first after Sims to bring the Woman's Hospital into prominence by his brilliant lectures and his fascinating text-book on "Diseases of Women" which was one of the first to appear in this field and was promptly translated into the French, Spanish and Italian languages. Dr. Thomas was a bold, brilliant, rather dramatic operator, who revived and did much to establish and popularize ovariectomy and the surgery of ovarian tumors. This preceded the septic theory of disease and characterized the period when the surgeon washed his hands after operating rather than before. The death rate was appalling, but he boldly attacked every case with the conviction that if three were saved out of every four it was better than that all should perish wretchedly. With the introduction of asepsis his experience thus acquired brought his percentage of recovery near to 100 per cent.

DR. EDMOND RANDOLPH PEASLEY was a contemporary of Dr. Thomas and worked assiduously along the same lines. He elaborated the idea of drainage and irrigation in laparotomy cases. He devised a most ingenious apparatus for drainage by gravity, by syphon, and tubes for irrigation by syringe. His results were not encouraging but he wrote and published the best treatises on ovari-

otomy that up to that time had appeared. Dr. Peasley presented an interesting investigation into the life-prolonging results of ovariectomy. Basing his computation on a series of one hundred ovariotomy patients reported by Spencer Wells and, estimating the average expectation of life of a normal woman at the age of thirty-nine years with an ovarian tumor, as four years (without operation), the operation must have added to them 420 years of life. By a similar calculation it may be shown that in the United States and Great Britain alone ovariotomy has within the last thirty years (1892) directly contributed more than 30,000 years of active life to woman; all of which would have been lost had ovariotomy not been performed. Hence he claimed that "ovariotomy in spite of a 20 per cent. death rate is the only appropriate remedy in not less than 80 per cent., *i.e.*, large thin-walled unilocular cysts, of all cases of ovarian tumor." That was in 1892. Now, of course, it is recognized as the only treatment in all cases.

DR. EMIL NOEGGARATH brought great distinction to the hospital in his discovery of the latent influence and effect of gonorrheal infection. While it was not announced to the profession and the world till after his resignation from the surgical board, it was during his term of service at the Woman's Hospital that his observations were made. These led to the marshaling of facts which brought to him the concept and final conviction.

That the original illuminative work of the Woman's Hospital was far-reaching in its influence and cordially recognized beyond the limits of our own country, is evident from the opinions of our confrères across the water. The eminent Professor Kleinwächter in his contribution to Müller's encyclopedic work on Obstetrics remarks: "In the specialty of gynecology, North America strives for primacy." "There within a short time gynecology has risen to an astonishing height, especially in an operative direction. Beginning with the year 1870 Germany within a few years redeemed her neglect. The stimulus was in great part derived from the work of Sims, 'Clinical Notes on Uterine Surgery,' which first made Germany familiar with American gynecology."\*

Fritsch, the distinguished professor at Breslau says: "The idea of this instrument," speaking of the Sims' speculum, "originates with Marion Sims, who may be called the creator of the new gynecology. Guided by a principle he was the first to make gynecology surgical and it is the maintenance of this direction that has obtained for gynecology its modern triumphs."

\* For this and the following extracts upon this subject I am indebted to an anniversary address by Dr. Geo. B. Harrison.

Professor Breisky, the German translator of Emmet's work, "The Principles and Practice of Gynecology" remarks in his preface, "Emmet's name shines as the representative of the surgical school. It is essentially personal, individual, growing out of his own experience and represents therefore more than any similar work, the specific American school."

The French authority, Pozzi says: "To the first enthusiasm excited by the publications of Jobert, there succeeded in Europe complete discouragement, when at the end of 1858, a young American surgeon, Bozeman, of Montgomery, Alabama, came to Paris and made known the modified procedure of his teacher, J. Marion Sims of New York. The ardor of the French surgeons, Follin and Verneuil, popularized the American method."

Hart and Barbour in their "Manual of Gynecology" remark: "The recognition of laceration of the cervix as a distinct and important lesion, with the operation introduced for its cure, is one of the many gynecological advances of the last twenty years. For this we are indebted to the genius of Dr. Emmet of New York."

These were the pioneers—the giants of early days. Many worthy successors have followed in their footsteps, men of no mean surgical ability and possessed of original inventive genius, whose work will stand the test of time and be attested by later writers.

#### THE PATHOLOGICAL DEPARTMENT.

In the early days the pathologist was usually the professor of pathology in one of the New York medical schools, and his visits to the hospital were made only when an autopsy was to be performed. The surgical material was collected from the operations and saved for these visits. The hospital was very fortunate in having for six years the services of Dr. Wm. H. Welsh, at present Professor of Pathology, Johns Hopkins University. His painstaking autopsies and careful instruction of the house staff in pathological examinations and findings added greatly to the interest and value of the hospital work. Later under Doctor Jessup's administration an effort was made to save all pathological material, subject it to careful thorough examination and record the reports on the history charts. The examinations were made at the Roosevelt Hospital Laboratory.

In 1915, the laboratory was accorded more fitting recognition. Appropriate floor space was assigned and the rooms supplied with efficient laboratory equipment. Dr. Lawrence W. Strong was appointed Director of the Pathological Department, with membership on the Surgical Board, and Dr. Emil Schwartz Assistant Pathologist.

In November, 1915, the department moved into the present Thompson Pathological Laboratories. These consist of two floors of the Thompson Pavilion. The first floor has rooms for clinical pathology, bacteriology, serology and photography, a preparation and stock room, also a museum and a conference hall. The floor above has the histological pathology room, a library and offices for the director and the assistant pathologist. The arrangement and equipment of these laboratories embody the best up-to-date ideas of the most modern laboratory with an eye to time-saving efficiency and accuracy of work.

In 1916, the department inaugurated pathological conferences, held every Saturday morning, open to the medical public. At these conferences the material received during the week is demonstrated. The department also issued in this year an entire number of the Hospital Bulletin with report of cases, description of special technic and development of the laboratory. Courses in gynecological pathology are given to properly accredited applicants according to their special needs.

In 1917, clinical conferences were inaugurated to precede the weekly pathological conferences. These are held by the members of the Surgical Staff. The conference hall has been equipped for stereoptican demonstrations and it is now possible to have patients brought from the hospital wards directly into the conference hall.

The most recent change in the department has been the employment of women as technical assistants, both in the histological department and in the clinical pathological laboratory.

#### ANESTHESIA.

The anesthetic department of the hospital as organized at the present time is a gradual evolution from the old-time method in vogue when the junior internes administered all the anesthetics—a slipshod and dangerous system. About ten years ago several of the internes, who were graduating from the hospital and desired to locate in New York, were induced to make a study of anesthetics and become experts in its administration. Three of them were placed on a nominal salary and assigned alternate days of the week, which they devoted to giving anesthesia at the hospital. By mutual understanding they were enabled to substitute for each other when private professional calls were pressing. As their private practices grew they resigned from time to time but succeeding graduates of the hospital followed in their footsteps and so maintained the constant staff of anesthetists.



This method proved fairly satisfactory until two years ago when the capacity of the hospital was greatly increased, two new operating rooms and a maternity service having been added. It was found impossible to retain the services of a sufficient number of doctors skilled in anesthesia for a sum the hospital could consistently expend for this service. It was therefore decided to try trained nurses as anesthetists. Accordingly four nurses who were completing the post-graduate course in the hospital and who had been noted as being especially observing, careful and conscientious, were selected and placed under instruction of the before-mentioned visiting anesthetists. This training covered a period of four months and embraced verbal instruction, familiarization with the various apparatus, constant observation, etc., and finally administration under the critical observation of the instructor.

These nurses were found to be quick to learn, intensely interested in the work, and became expert anesthetists. They live in the Nurses' Home adjoining the hospital, and are always available, day or night, for obstetric or emergency cases. That they are interested in and enjoy the work is apparent from the fact that three of the original four are still at the hospital and the fourth is continuing the work elsewhere.

One of the original instructors is still retained as visiting anesthetist with general supervision of the work of the department. He is available for any especially difficult ward case and is on call for private room cases when the surgeons request.

The routine anesthetic given at the Woman's Hospital consists of gas-oxygen induction followed by drop ether on an open mask. A mechanical device known as the Montgomery etherometer (devised by one of our instructors) for administering drop ether is used in practically all ether anesthesia. It is simple in mechanism, easy to control and can be regulated to supply a definite number of drops per minute. This insures a steady, even supply of ether and an unvarying degree of anesthesia. The patient is no longer deluged with ether one minute and restless for want of it at another. Gas-oxygen throughout is given in suitable cases.

#### THE MATERNITY DEPARTMENT.

The original act of incorporation for the establishment of the Woman's Hospital announces in Section I—the formulating “of a body corporate, with power to establish, maintain and conduct a hospital in the City of New York for the treatment of diseases peculiar to woman, and for the maintenance of a Lying-In Hospital.”

In the year 1910 the Board of Governors established a Maternity Service, by designating a certain number of private rooms to be used exclusively for private maternity patients under the care of the attending surgeons. A head nurse was placed in charge and a delivery room equipped. Later additional, less expensive rooms and small wards of two and three beds, about twenty beds in all, were added to the service. A room was also fitted up as a nursery. Dr. Franklin A. Dorman was appointed Obstetric Surgeon with membership in the surgical board. The service increased so rapidly that the need of still more beds and a special maternity staff soon became evident. Accordingly another ward of twenty beds was provided, also another large delivery room, a labor room, chart room, two nurseries, examination room and isolation ward. Provision was also made for a resident salaried obstetrician, an assistant attending obstetrician and an out-patient staff.

During the year 1917 over six hundred confinement cases were cared for.

#### THE OUT-PATIENT DEPARTMENT.

The Out-Patient Department has large, commodious quarters on the ground floor of the Thompson Pathological Building. The waiting room is in charge of a registrar who interviews all applicants and decides upon their claims to charity. A personal history is taken of all patients and they are then referred to the nurse in charge of the department, who takes a medical history. Following this they are shown to the dressing room by a pupil nurse and prepared for examination. Entering the examination room in turn they are examined and treated by the attending physician. After examination the patient returns to the office and is advised by the doctor as to her condition, etc. If the doctor thinks the patient will be helped by local treatment she receives a card on which are the days and hours she may return. If an operation is thought advisable, the patient receives a recommendation card which she gives to the registrar and is then shown by her to the main office where she may arrange for entering the hospital.

The Electro-therapeutic Department is thoroughly equipped with the latest and best apparatus, all forms of electric therapeutics are efficiently applied and the x-ray work is of an especially high order. During the past year over 500 cases were referred to this department for x-ray pictures. The proximity of the out-door clinics and the cystoscopic department to the x-ray room facilitates reciprocal confirmation of diagnosis that is invaluable. The hospital patients

likewise profit by the convenience of these departments. In all appropriate cases x-ray findings and the actual pictures form a part of the routine histories.

#### THE SOCIAL SERVICE DEPARTMENT.

A social service worker has been occupied at the hospital for many years. The department was not officially recognized by the Board of Governors, however, till 1912. The staff consisted of a trained social service worker, giving part of her time on clinical work for a few hours each day, and one trained nurse working on full time.

In May, 1916, the organization was made a regular department of the hospital to be supported from the hospital funds and as the work had grown it was found necessary to have a clerical worker working full time. The work at this time was put in charge of a graduate nurse who had had social service training and the department was asked to take charge of the return case work of the hospital.

The department now consists of three graduate nurses, a pupil nurse spending two weeks time in the office and visiting the homes, and one clerical worker. It endeavors to further the work of the surgeons by teaching patients in their homes to take proper care of themselves and carry out the doctors' orders. While a patient is in the Hospital care for her children is provided if necessary and daily reports are brought to her. If her husband is out of work the department endeavors to interest the proper agencies to secure employment for him, so that the patient's mind may be at rest. Special nourishment and abdominal belts when needed are furnished or are procured through the coöperation of other relief societies. The wards are visited daily and should a patient need further care when discharged from the Hospital she is sent to a convalescent home.

In July, 1917, the free obstetrical ward was opened, and the social service nurse was assigned the prenatal work in connection with the clinic, also teaching the mothers in their homes after confinement to care for themselves and baby.

Since social service was recognized as a department of the Woman's Hospital in 1912, the workers have taken care of 4583 women and girls from the wards and dispensary, have made 11,482 visits in their homes and 3768 visits in the wards, have sent 837 to Convalescent Homes and 396 to other hospitals for care which they could not receive at the Woman's Hospital, have consulted and advised 5791 in the social service office and have given 543 material relief, such as money, abdominal belts, food and clothing.

A Department of Pharmacy fully equipped with all the chemicals and drugs ordinarily in demand in a surgical hospital is maintained and all aseptic and antiseptic solutions required are made up and prescriptions of every kind written by the Surgeons are compounded. A professional pharmacist is in daily attendance. She is also a member of the board of instruction in the nurses' training school.

The pharmacy supplies all the medicines for both the house patients and for the clinics. The latter are charged twenty cents for each prescription. Those who cannot afford this receive the medicines free.

171 WEST SEVENTY-FIRST STREET.

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## INTERMITTENT HYDRO- AND PYONEPHROSIS IN THE FEMALE WITH SPECIAL REFERENCE TO THE ABNORMALLY MOVABLE KIDNEY AND URETER.

BY

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(With nineteen illustrations.)

THE term intermittent as applied to hydro- and pyonephrosis implies a period of distention of the kidney pelvis and a period of nondistention. The amount of distention will vary from that caused by a collection of fluid slightly in excess of the normal capacity of the pelvis to a very large amount.

When distention produces an appreciable tumor, the tumor will be present at one time and absent at another, or after several periods of appearance and disappearance may fail to subside.

For the purpose of convenience I shall use the word nephrectasis when referring to distention of the kidney pelvis, without regard to the character of the fluid. The condition to be considered is mainly that of hydrostatic pressure, whether the contents of the tumor be urine with pus or without pus. The etiology of infection where a purulent fluid exists will not be considered.

### ETIOLOGY.

Intermittent nephrectasis may occur at regular or irregular intervals. The regular interval type is the result of obstruction of the urine stream, dependent directly or indirectly upon abnormal mo-



bility of the kidney. The irregular interval type is the result of obstruction of the urine stream, not directly dependent upon abnormal mobility of the kidney. Abnormal mobility of the kidney may exist, but a fixed kidney is here the rule.

In the regular interval type the obstruction may be due entirely to an acute angulation of the ureter following a pronounced change in the position of the kidney, or to pressure upon the ureter by a tumor attached to an abnormally movable kidney. In the irregular interval type the factors causing obstruction may be a stricture,

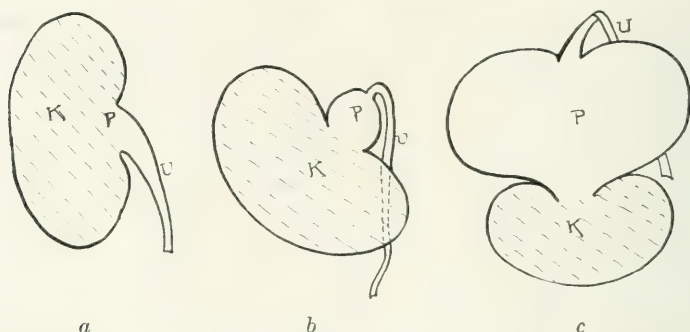


FIG. 1.—A schematic drawing showing the evolution of Case 1 and of Chetwood's case. *a* Shows the kidney and ureter in normal position and condition. *b* Shows kidney prolapsed without a corresponding change in the position of the ureter with resulting angulation and slight distention of the kidney pelvis. *c* Shows a stage of further prolapse of the kidney but no change in position of the ureter with resulting acute angulation of the ureter and marked distention of the kidney pelvis.

the result of an infection or injury, a stone, a new growth, pressure on the ureter by a retroperitoneal body such as a kidney tumor, or pressure by an intraperitoneal body, such as a fibroid tumor or a pregnant uterus. Angulation or kinking of the ureter may enter as an additional causative factor.

Transient polyuria may also be an additional factor in both the regular and irregular interval types.

The obstruction in the regular interval type is usually complete, but may be incomplete and will appear or disappear according to the position of the kidney. As the position of an abnormally movable kidney is dependent upon the position of the patient, the obstruction occurs during the day, while the patient is in the erect or sitting posture and disappears at night when the recumbent position is assumed. The obstruction in the irregular interval type is usually incomplete but may be complete; the primary factor, however, remains permanent and usually acts independently of the position

of the kidney although the change of position of the kidney may exaggerate or lessen the obstruction.

In the regular interval type the general direction of the ureter is normal unless influenced by a body external to it. In the irregular interval type the general direction of the ureter may be either normal or abnormal.

It is the rule in cases of prolapsed kidney for the lumbar or abdominal portion of the ureter to descend with the kidney. Usually

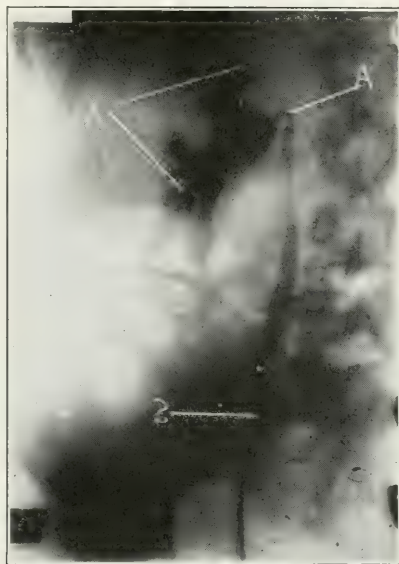


FIG. 2.—(Chetwood's case before operation.) Illustrates a constriction in the upper urinary tract. The kidney here has prolapsed but the ureter has not, and in consequence we have an angulation of the ureter at the point where it fails to descend.<sup>1</sup>

the degree of prolapse, with a curve in the upper portion of the ureter, follows closely the degree of prolapse of the kidney (Fig. 5). When this is not the case the curve of the ureter becomes more and more marked as the result of the fascial support of the ureter, in the immediate region of the curve, failing to yield or follow the line of fascial cleavage in the process of descent of the prolapsed kidney. Here an acute angulation of the ureter forms with resulting interference to drainage and the damming back of the urine in the pelvis of the kidney (Fig. 2). When therefore the position of the ureter

<sup>1</sup> Figs. 2 and 3 are inserted by permission of Dr. Chas. H. Chetwood of New York, published in the *New York Medical Journal*, April 14, 1917.

does not change with the change of kidney position, an acute angulation results which constitutes an obstruction. When the ureter prolapses with the kidney there is usually but little interference to the urine stream (Fig. 10).

A stone in the ureter must cause either partial obstruction of the urine stream, complete obstruction with or without necrosis of the ureter and extravasation of the urine in the perirenal tissue, or expulsion of the stone. It may occasion partial or complete distention

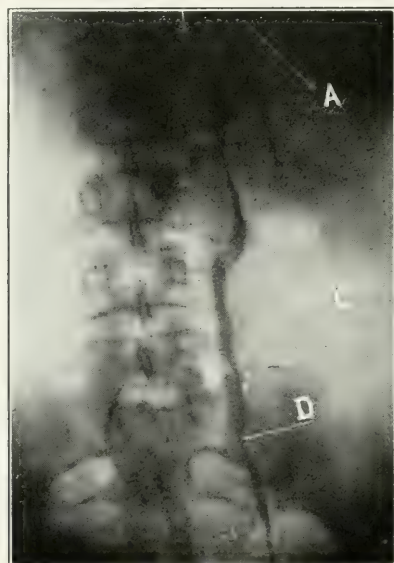


FIG. 3.—(Chetwood's case after operation.) Kidney restored to normal position by nephropexy with angulation relieved.

of the kidney pelvis, but its presence alone can never account for the regular intermittent type of nephrectasis.

Inflammation of the kidney parenchyma as in tuberculosis of the kidney, may diminish the capacity of the ureter by clogging it with débris, or by thickening its walls. Inflammation of the kidney pelvis or inflammation in or about the intestines may result in the thickening and contraction of cellular tissue surrounding the ureter and thus enter as a causative factor in obstructing the urine stream.

A supernumerary or accessory renal artery passing in front of the ureter is considered by many authorities an etiological factor in nephrectasis. That the crossing of the ureter by an artery is not in itself sufficient to seriously disturb the flow of urine through the

ureter is demonstrated in the female, as shown by the relationship between the ureter and the uterine artery.

In order for an artery to act as a constrictor the direction of the force it exerts upon the ureter must be more or less at a right angle to the general direction of the ureter, therefore the only conditions under which I can conceive of an accessory renal artery being the



FIG. 4.—Dorsal position. Kidneys and ureters in normal positions.

origin of an obstruction to the urine stream, are when the artery passes in front of the ureter, is attached to the lower pole of the kidney and the upper pole is displaced forward and downward.

I have met with accessory renal arteries attached to the lower pole six times in operating upon the kidney and in no instance did an appreciable pelvic distention result. Therefore I have not been able to demonstrate, to my own satisfaction, the importance of



the accessory artery as a causative factor in nephrectasis; furthermore in none of the cases to be related did an accessory renal artery exist.

Transient polyuria may occur in abnormal or normal individuals as the result of temporary excitement, intestinal indigestion, sudden



FIG. 5.—Study of preceding case in erect position. On the left side we see the kidney and ureter beginning to prolapse and on the right side the prolapse of both kidney and ureter well advanced. The right ureter is displaced in front of the spinal column and reaches practically the middle line. This picture, with the preceding one, gives a good idea of the progressive changes of position of the ureters usually accompanying the descent of the kidneys.

change of temperature, use of drugs, or increased consumption of coffee, tea, beer or water.

When polyuria occurs in a patient with any of the abnormalities of the kidney or ureter mentioned, the kidney pelvis may distend to many times its normal size and force the upper pole into close contact with the diaphragm. The upper pole may fix itself to the

region of the diaphragm as the result of changes in the renal and perirenal structures from hydrostatic pressure; but its fixation will not necessarily prevent a recurrent attack of distention for the reason that saculation of the kidney pelvis, if great, is usually permanent, and the collection in the sac when polyuria recurs, will produce sufficient external pressure upon the ureter to seriously retard or obstruct the urine stream (Fig. 11).

It is interesting to observe that under these conditions, pressure within the distended kidney pelvis will eventually reach a point where it will overcome the resistance offered by the pressure of the distended sac on the ureter, so that when this pressure in the kidney pelvis exceeds the pressure upon the ureter from without, the urine will flow more rapidly through the ureter until the pressure in the kidney pelvis lessens. This mechanical adjustment may eventually terminate in relief, or may continue indefinitely and demand surgical interference.

#### NEPHRECTASIS OF PREGNANCY.

*Nephrectasis of Pregnancy.*—The anatomical and mechanical reasons for nephrectasis during pregnancy, as commonly accepted, are to my mind not satisfactory. The slight obliquity of the pregnant uterus with its right border directed a little backward, is supposed to account for the high per cent. of right renal retentions. The region of pressure on the normal ureter by the pregnant uterus between the third and ninth months is supposed to be about where the ureter passes over the pelvic brim. This reasoning seems to me unsupported by facts, for if a vertical plane be passed immediately in front of the lumbar vertebra and sacral promontory, where with the iliac region the greatest amount of pressure would be exerted by the pregnant uterus, it will be found in front of the normally placed ureter. The vertebral column therefore projects beyond the normally posed ureter and acts as a protection to it (Fig. 14). If this projecting bony structure is nature's scheme of protection, interference with the urine stream by pressure of the pregnant uterus on the ureter can take place only when the ureter is displaced and assumes a position in front of the vertebra or the ilium.

That the abdominal or lumbar portion of the ureter is at times so displaced cannot be questioned.\*

\* Figs. No. 5, 7, 9, 10 and 13 demonstrate the possibility of the ureter being caught between the vertebral column and pregnant uterus thus causing interference to the urine stream. In the non-pregnant condition such cases usually escape distention of the pelvis of the kidney, because the ureteral support yields with the kidney resulting in pronounced curves, which as a rule do not interfere materially with the flow of urine.

The direction of the ureteral displacement where there is associated with it an abnormally movable kidney, may be toward or from the spinal column, and usually the change of position takes the form of one or more curves. According to my observations the greater curve is as a rule in the direction of the spine. It is the exception



FIG. 6.—Unusual displacement of right kidney and ureter with patient in dorsal position. Left kidney and ureter practically in normal position.

when it is away from the spine. If the curve passes in front of the spine or the crest of the ilium during pregnancy, the ureter may be subjected to such pressure between either of these resisting surfaces and the pregnant uterus, as to interfere materially with the urine stream. This shifting, however, occurs usually when the patient is

in the sitting or standing posture or when the prolapsed kidney and ureter have assumed their lowest and most abnormal positions. Should a woman several months pregnant with such a prolapsed kidney and ureter assume a standing or sitting posture and lean forward, then assume a recumbent position, it can be readily

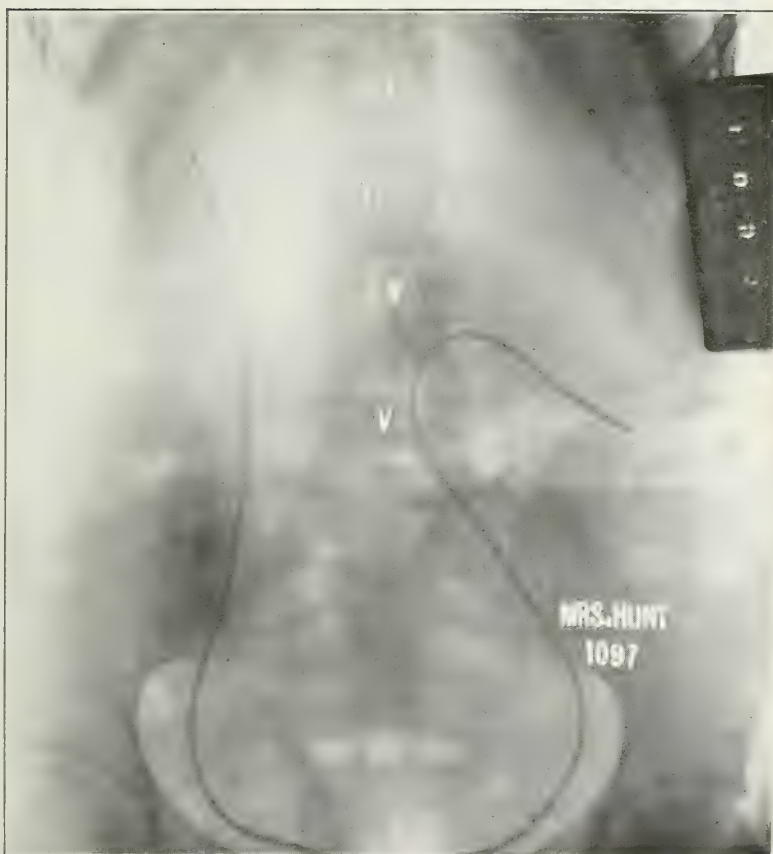


FIG. 7.—Study in upright position of preceding case. Right kidney and ureter further displaced. Ureter forced almost to the median line. The position of the left kidney and ureter has remained practically the same.

seen that the ureter may be caught between these resisting bony structures and the uterus.

The following facts also tend to support this view:

(1) A large percentage of these cases occur on the right side, which corresponds with the fact that a large percentage of prolapsed kidneys occur on the same side.



(2) Granting that the theory of right rotation of the pregnant uterus explains the more frequent obstruction of uterus on the right side, it does not explain the obstruction on the left side.

(3) When the pregnant uterus is sufficiently large to give support to the kidney, the ureter usually straightens out and escapes pressure with relief to the patient.

Independent of kidney and ureteral position, however, the factors mentioned as causative in the irregular interval type of nephrectasis, may exist coincident with pregnancy and occasion nephrectasis during pregnancy.

The type of nephrectasis commonly recognized in the pregnant woman is that where pus is found in the urine. The presence of pus associated with pain in the kidney region, is, of course, the chief factor here in directing the attention to the origin of the disturbance. Pain alone occurring in the right abdominal region during pregnancy, is usually not sufficient to suggest a kidney lesion and hence it is that not infrequently a minor degree of nephrectasis exists as the source of the pain, which has been considered mistakenly appendicular colic, intestinal colic or "ovarian neuralgia." Such a condition may be transient and be relieved automatically by the woman assuming, for a period of time, the semiprone, sitting or knee-chest position. When the uterus is emptied the direct cause of interference to the urine stream is removed and unless some permanent causative factor exists these organs will resume their normal function and no evidence will remain of their having entered as factors in the disturbance during pregnancy.

Pilcher has pointed out that pyelitis, pyelonephritis and pyonephrosis when occurring with pregnancy are terms commonly used synonymously.

Infection of the kidney or kidney pelvis is not a condition peculiar to pregnancy. In fact it commonly occurs independently of pregnancy, therefore its association with pregnancy is not sufficient evidence to conclude that it is dependent upon this condition. Distention of the kidney pelvis, however, when it occurs within certain definite periods of pregnancy, may with reason be attributed to the same, because it is relieved through posture or the emptying of the uterus.

Pilcher (*Surgery, Gynecology and Obstetrics*, vol. x, page 168, 1910) in summarizing an article on this subject, states that in his opinion pressure on the bladder is the usual cause of the ureteral obstruction and that there is more to be gained by favoring drainage of the renal pelvis by a position in which the kidney remains on a

higher level than the bladder, than there is from any fancied relief of pressure on the ureter. He bases his argument particularly on a case in which he was able to collect about 2 c.c. of urine in ten minutes from a diseased right kidney when the patient was in a recumbent position, but collected at the rate of 4 c.c. a minute in a sitting position.

I do not believe that this is sufficient evidence to support his contention that because the kidney was raised above the bladder the

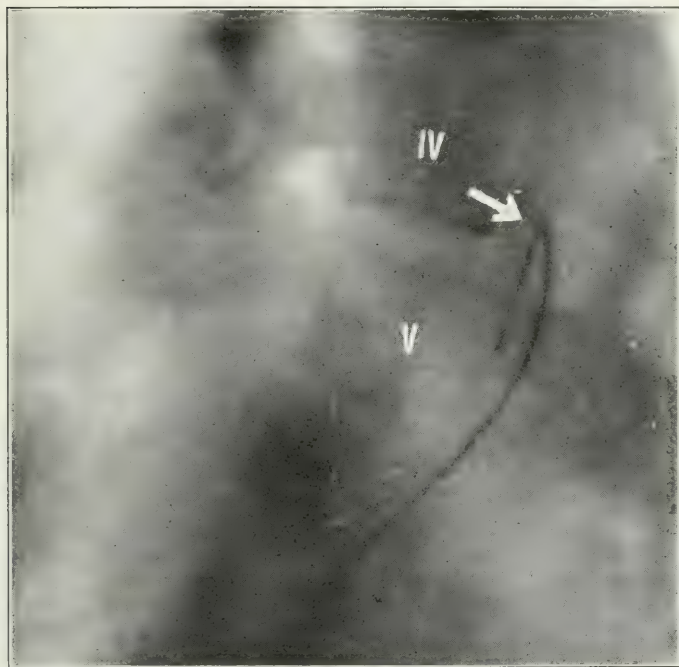


FIG. 8.—Study in profile, upright position of preceding case. Right ureter is seen in front of the vertebral column, showing an apparent angulation which in reality (see Fig. 7) is a pronounced curve.

flow was increased, but is evidence in support of the theory that the sitting position, by encouraging the forward position of the uterus, relieved the pressure on the ureter.

Pilcher relates another interesting case, one of pyonephrosis, which in my opinion is also evidence in support of the theory that the ureter is pressed upon by the pregnant uterus. On catheterizing the right kidney pelvis of a patient in her ninth month of pregnancy suffering from an acute pain on the right side, he found it contained

4½ ounces of residual urine and pus. Because of this large amount of residual urine in the pelvis of the kidney, the catheter was left in place for five hours. The patient was turned on her left side, head and trunk raised.

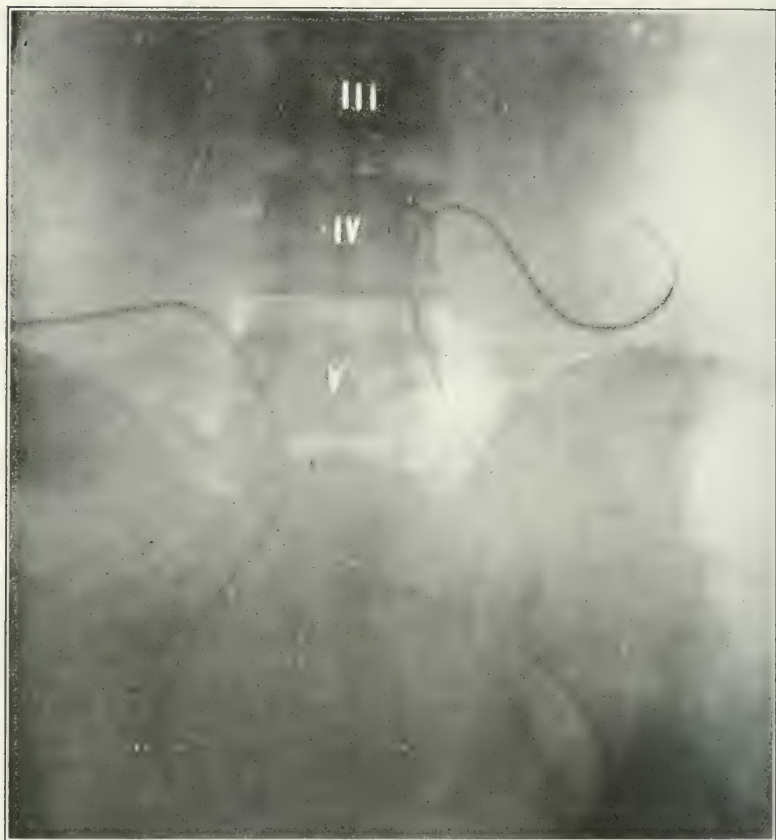


FIG. 9.—Upright position showing an unusual degree of mobility of both kidneys and ureters and demonstrating also how with an abnormally movable kidney the ureter usually follows the descent of the kidney. The entire abdominal portion of both ureters are in this instance remarkably displaced. The left has advanced in front of the sacral promontory, rendering it peculiarly susceptible to pressure after the fourth month of pregnancy.

He further states that when the catheter was removed it had “become molded to correspond to the curves of the ureter” . . . which “showed the direction of the ureter to have been changed, so that it was pushed over further to the right.” A catheter removed under these circumstances would doubtless be somewhat twisted, but the direction of the twists on removal could hardly be considered

conclusive evidence of the exact position of the ureter with respect to the median line.

The position of the ureter with respect to the median line can be determined only by the radiograph with catheter or some silver salt solution in the ureter, but if Pilcher was correct in concluding that the ureter in his case was deflected considerably to the right of its normal course with an "extra curve" between the brim of the pelvis and the kidney, then in my opinion the ureter was forced in front of the ileum and the point of greatest pressure on the ureter was at the

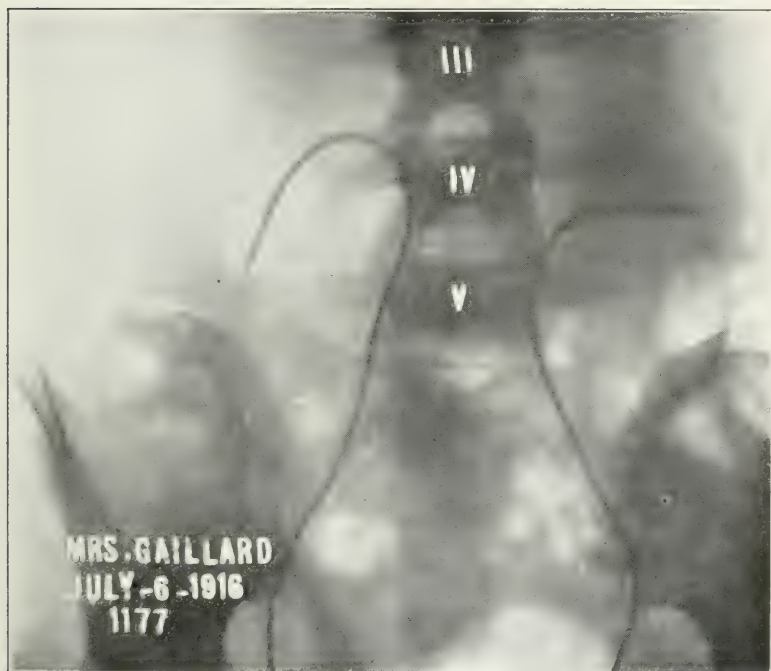


FIG. 10.—Upright position. Both ureters displaced in front of spinal column.

point where it passed over the crest of the ileum. This argument is supported by the second case reported in this article (Fig. 11), where the ureter was deflected to the right or in front of the ileum and the catheter could not be passed beyond the crest, also by a case of minor displacement of both kidney and ureter, not reported here, where the greater curve was in the direction of the ilium.

Dr. W. C. Danforth (*Surgery, Gynecology and Obstetrics*, vol. xxii, page 723, 1916), cites an interesting case in support of the argument



that the pressure of the pregnant uterus on the ureter is the cause of obstruction to the urine stream. A woman in the fourth month of pregnancy was, when first seen by him, suffering severely with pain over the right kidney region. The catheter entered the left ureter without difficulty. The urine was perfectly clear. On the right side, the catheter could be passed only about 10 cm. "from the bladder." There it met with a positive obstruction. The patient was then turned upon the left side in order to permit the uterus to move forward and away from the ureter. The catheter then passed to the kidney without difficulty and turbid urine flowed freely, showing that it had been confined under great pressure. The fact may be emphasized in this connection that while a prolapsed kidney usually has associated with it a displaced ureter, the ureter is not commonly displaced in a manner which would subject it to pressure; hence the comparative rarity of nephrectasis during pregnancy.

#### DIAGNOSIS.

In cases of nephrectasis, where the tumor has reached a palpable size and its anterior surface is in apposition with the anterior abdominal wall, we usually expect to find resonance immediately over the tumor and dulness in the flank, but in fact the location of resonance and dulness varies, (1) with the kidney involved, *i.e.*, right or left; (2) with the extent of mobility or fixity of the kidney; (3) with the amount and direction of the distention of the kidney; (4) with the amount of gas in the colon at the time of the examination; (5) with the extent of fixation or mobility of the cecum and ascending colon.

The highest point of attachment of the ascending colon is much lower than the highest point of attachment of the descending colon. The lowest point may vary considerably, but is usually about the iliopectineal line or the upper margin of the false pelvis. The average width of its attachment to the intraabdominal fascia is much less than that of the descending colon. For these reasons it will be usually found that in right nephrectasis where the tumor has attained considerable size, dulness in the flank and dulness over the tumor is the rule (Case III). Exceptions to this rule will occur when the colon or part of it is fixed externally to its usual position as the result of an inflammatory action about the cecum or following an operation for the removal of the appendix. A radiograph with bismuth in the colon is a most satisfactory way of determining the exact relationship of the colon and the tumor.

The descending colon is continuously attached to the intraabdominal fascia from the splenic region to a point well within the limits of the false pelvis. Here it blends with the sigmoid, which in turn is fixed to the fascial structure. Beginning therefore, at a very high point, the descending colon has a broad attachment extending laterally and is in its entirety a fixed and stable organ, so that when distention of the left kidney occurs, the descending colon, although it may be forced well forward, usually maintains, because of its position and fixation, its normal vertical direction. For this reason it will be usually found that in left nephrectasis where the tumor has attained a considerable size, dulness in the flank and resonance immediately over the tumor is the rule as exemplified in the second case to be cited.

Again, my study of a large group of abnormal movable kidneys through the median abdominal incision has led me to the conclusion that not infrequently the right prolapsed kidney is located well to the outer side of the colon, whereas the left prolapsed kidney usually remains posterior to the colon. Therefore, when there is superimposed upon this malposition of the right kidney a marked distention, the colon may be forced well toward the median line; but the relative position of the left kidney to the colon, under similar conditions usually remains practically the same.

Intermittent nephrectosis may be mistaken for renal abscess, single or polycystic kidney, hypernephroma or extravasation of the urine in the perirenal area. It may also be mistaken for a tumor of the ovary, liver, gall-bladder or spleen. The differentiation is, however, not difficult if the history points to a subsidence and recurrence of the tumor at regular or irregular intervals. But when the tumor is of several days' duration the diagnosis may be difficult. If under these circumstances the cystoscopic examination reveals an intermittent flow of urine from the affected side, this, with the previous history of intermittent tumor formation, is evidence sufficiently conclusive to base a diagnosis upon.

In the first case to be related, the distention of the kidney pelvis was of sufficient size to be appreciated by touch and sight at regular intervals. In the second case the same was true at irregular intervals. In the third case distention of the kidney pelvis was at regular intervals but was not of sufficient size to be observed and even though it had been larger, it is doubtful if it could have been noted because of the presence of a large single cyst of the kidney parenchyma. In the fourth case the patient was never seen during a severe attack and even if she had been, it is doubtful if the in-

creased size of the pelvis was ever sufficient to have been appreciated by sight or touch. In none of the other cases to be related was a distention of the pelvis noted objectively. The determination of the distention in these as in the third and fourth cases was by the subjective symptom, pain.

In the second case, when the tumor came under my observation, it had persisted for two days and two nights, increasing in size, although as shown by the catheter on the third day, the flow of the urine through the ureter was greater than from the normal kidney, being 3 drops to 1, with a short interval.

In acute inflammatory tumors, such as a perinephritic abscess, the temperature, blood count, etc., enter as important factors from a diagnostic standpoint.

In the single or polycystic kidney, also in hypernephroma, we have the history of the presence of a tumor for many years without interruption to the flow of urine.

In extravasation of urine in the perirenal area, we have the history of a blow or of some previous pathologic lesion, such as malignancy or stone.

In differentiating intermittent nephrectosis from all conditions mentioned, the history regarding intermission or nonintermission is the chief consideration.

The urine in hydronephrosis is clear and of low specific gravity. In pyonephrosis, we have an admixture of pus, sometimes blood and mucus. In neither instance, however, does an examination of the urine furnish information which might be considered pathognomonic.

#### TREATMENT.

In considering the treatment of intermittent nephrectasis, it is to be noted that the condition may subside after one or two attacks and never recur. Such, however, is not the rule if the sacculation of the kidney pelvis has been considerable. When the attacks of pain are due to an acute pelvic distention as the result of an angulation of the ureter, and this angulation in turn dependent upon a prolapsed kidney, the best treatment, provided there is not an associated infection, is that of fixing the kidney.

If there be associated with a ptosed kidney a cyst of its parenchyma, the cyst should be removed and the kidney fixed (Case III) (Fig. 12), but if there exists structural disease of the kidney as the result of an infection (Case IV, V and VI) or if great distention of the kidney pelvis recurs as in (Case I) or without an accompanying

infection (Case II) (Fig. 11), nephrectomy is the procedure of choice. If a stone in the ureter (Case VI) or a tumor external to the ureter is the cause of obstruction, their removal is the rational procedure.

In the first case to be cited, elevation and fixation of the kidney might have drained the pelvic sac and restored the kidney to normal function, but in view of the amount of pus expelled, the chance against such a result was considerable and, as the other kidney was healthy, the rational procedure seemed to be that of nephrectomy.

Likewise in the second patient, at the time that she came under my care, there seemed to be only one rational procedure, that of nephrectomy, yet could this case have been studied several years previously, it is possible that some other form of treatment than nephrectomy might have been adopted to advantage. Her history suggested polyuria as a factor. The cause of polyuria might have been discovered and remedies used to diminish the flow, such as bromide, morphine or atropine. Manipulation of the tumor and maintenance of the horizontal position might also have entered as elements in the treatment. The one method of procedure, other than nephrectomy which could possibly have been considered in the second case, when I saw it, was tapping. Complete cures have been effected by relieving the pressure in this way, but it has been usually necessary to repeat the tapping many times. Such treatment has also ended in death in cases which could have been cured by radical operation. My second case frequently obtained the same relief by position as might have been obtained by tapping, but the cause was not removed. At the time that I saw her, the attack had lasted longer than previous attacks without relief and it was reasonable to suppose that the time for tapping had passed and the only procedure which offered a promise of cure was nephrectomy.

In fact when renal distention is very marked, the elastic tissue and muscular fibers of the renal pelvis are damaged to an extent which makes them incapable of returning to their normal state, therefore, catheterization of the ureter as a curative means is futile. In the lesser degrees of distention, before permanent impairment in the walls of the pelvis of the kidney has occurred, repeated ureteral catheterization may not only give relief but may save the tissues from irreparable damage.

Ureteral catheterization combined with position, semiprone or sitting, is of value when there exists nephrectasis during pregnancy. The maintenance of the semiprone position, opposite to side affected, for a considerable period and as often as necessary, is in itself a remedial procedure as by it the uterus falls forward and the pressure



on the ureter is relieved. If both kidneys are affected the sitting or knee-chest position is preferable. It may be further noted in regard to position as a form of treatment that the dorsal position is applicable to cases of nephrectasis dependent upon an abnormally movable kidney, with an angulation of the ureter and also where there is a moderate collection in an old pelvic sac of a fixed kidney, but when this sac becomes greatly distended and is in itself a source of obstruction to the urine stream by direct pressure on the ureter, as instance in the second case to be reported, no position will give relief.

In the first case to be cited catheterization might have drained the cavity better than the recumbent position, but it is doubtful, besides the persistency of such treatment in chronic cases is extremely inconvenient.

In the second case to be narrated an effort was made to relieve the distention by means of a catheter, but, as the x-ray showed, it could not be passed further than the brim of the pelvis.

In the third case, removal of the tumor and fixation of the kidney were the rational procedures, as thereby the cause of obstruction was eliminated and proper drainage established.

In the fourth case structural disease of the kidney was extensive and removal of the kidney was thereby necessitated.

In the fifth case there were two or more cavities containing stones in the parenchyma of the kidney. There was besides, extensive infection of the kidney pelvis where were also several large stones, nephrectomy here was necessitated.

In the sixth case although the obstruction located in the pelvic portion of the ureter was removed, the removal of the kidney was eventually necessary because of an existing tubercular involvement of the kidney.

Treatment, with a curative object in view must, therefore, depend upon the cause, and if the cause of distention cannot be determined, or if determined, cannot be removed, nephrectomy, when the remaining kidney is normal, is the procedure of choice; but if the patient has but one kidney, the kidney sac should be opened and a fistula established.

The objective signs of an abnormally movable kidney are so unmistakable and the subjective symptoms so characteristic, that the scant consideration given to the surgical treatment of the posed kidney seems incomprehensible.

Many of our foremost surgeons ignore absolutely the question of nephropexy for the relief of symptoms referable to the nervous

and digestive systems associated with the prolapsed kidney. They believe that an effort to fix the kidney is called for only when there can be demonstrated a definite obstruction to the flow of urine as the result of renal position. This reason for not favoring nephropexy is, I judge, due to the fact that their technic fails to hold the kidney in position and therefore fails to give relief from symptoms.

Though many may deny the relationship between the abnormally movable kidney and certain subjective symptoms commonly associated with it, they should not fail to recognize the reasonableness in the claim that the law of interference in the circulation of other displaced organs and the resulting subjective symptoms, is applicable to the kidney when ptosed. An organ upon which the system so greatly depends for the elimination of its waste products, must be and is, richly supplied with blood, therefore any interference with its circulation is detrimental to its function and necessarily encourages destructive changes. In this connection, I refer particularly to the lowered resistance of the organ to tubercular invasion. In my experience, it has been a repeated observation that when tuberculosis of the kidney has not advanced to the extent of causing marked parenchymatous changes with resulting fixation, the organ is abnormally movable. I recall having followed a patient for four years or more as a simple prolapsed kidney with typical symptoms, who repeatedly refused nephropexy, but who finally had to submit to nephrectomy as the result of a sudden tubercular invasion.

Therefore, to those who do not believe in the operation of nephropexy from the standpoint of relieving certain subjective symptoms, I would earnestly suggest that they consider its advisability as a prophylactic means, not only with the object of correcting the cause of interference with the flow through the ureter and thus preventing nephrectasis, but with the object also of eliminating renal engorgement which may act as a causative factor in tuberculosis of the kidney.

#### CASE REPORTS.

CASE I.—Miss C. F., aged thirty-eight, was first examined November 20, 1903. Her chief complaints then were menorrhagia and metrorrhagia, fulness in pelvis, recurrent pains in lumbar region and severe headache at intervals. She described the pains as severe in character, lasting four or five hours and exaggerated on assuming the recumbent posture. They recurred about three or four times a year and had been noted for three or more years.

The pelvic and lower abdominal examination showed a large, uniformly rounded fibroma of the uterus, rising considerably above the

pelvic brim. It was a definite pathological lesion and this apparent cause of all distress seemed so self-evident that an examination of the upper abdominal region which should have been made was not considered necessary.

Hysterectomy was performed November 21, 1903. I have no record to show that the upper abdominal region was explored at the time of operation. In fact, I am quite sure that all interest then centered in the fibroid and whatever other abnormalities existed were overlooked.

Her convalescence was uneventful except that shortly before leaving the hospital, and after being on her feet for several days, she complained of a pain in her right side much the same as she had experienced at intervals before the operation. I gave no thought to the symptom being the result of a permanent cause, believing the true element of distress eliminated when the fibroid was removed, and dismissed her as cured.

She went to the country for further convalescence. Not only did the symptoms of distress in the lumbar region persist, but their severity increased and they recurred more frequently. Certain symptoms which had not existed previous to the hysterectomy, namely nausea, vomiting and constipation appeared and during the three months she was away she lost 20 pounds.

On my first examination of her after her return, I found her in agony. There was discovered a large tumor on the right side extending from a point below the last ribs to the crest of the ilium and to the umbilicus quite movable and could be easily forced beyond the middle line. There was dulness in the flank and over the tumor.

The patient was immediately put to bed. Examination the next morning showed the absence of the tumor. The kidney alone could be felt but the urine was filled with pus. She was made to assume the erect position during the day. The urine passed during the latter part of the day was found free of any abnormality but the tumor recurred by evening. This procedure was followed for several days with identical results.

A radiogram was made but revealed nothing. Ureteropyelography was not commonly resorted to at that time as an aid to diagnosis, so that a rare opportunity to secure what would have been, by such means, an interesting and valuable record was lost.

The diagnosis, however, was positive, namely, an intermittent pyonephrosis and on March 21, 1904, or about four months after the hysterectomy, nephrectomy was performed.

The body of the kidney was found at operation not particularly enlarged but the empty pelvic sac was as large as the kidney itself and when it was distended with fluid became twice as large, without the kidney proper sharing proportionately in the distention.

Since the operation fourteen years ago, she has been free from all symptoms and has gained 37 pounds.

The history of this case shows a more or less gradual onset of distention of the kidney pelvis, but when the tumor was removed

and the support to the kidney taken away the organ prolapsed, further angulation of the ureter increased and nephrectasis occurred.

Many of the symptoms presented previous to the hysterectomy were similar to those which not infrequently accompany prolapse of the kidney. In addition to those noted at the beginning of her history, she suffered from nervousness and always felt tired on awakening, even though she had slept well through the night, never felt rested. Dreams were frequent and disturbing, emotional control was lost; or as she expressed it "she did not have the proper control over her feelings."

The only symptoms relieved by the hysterectomy were the severe headaches, fulness in the pelvis, menorrhagia, metrorrhagia and the increase of pain on reclining. The other symptoms not only persisted but increased in severity.

A tumor in the lumbar region was not noticed by her until a month or more after the hysterectomy. Also pain in the renal region which occurred every three or four months, was more frequent after the operation, until it became of daily occurrence, and whereas before the operation, she could relieve it by keeping a sitting posture for five hours or more, after the removal of the tumor she could get relief only in the recumbent position.

From a mechanical standpoint, these facts are very interesting and the explanation is, that the presence of the fibroid did two things:

*First.*—Its shape and size within the true pelvis were such as to cause marked pressure at some point on the right ureter which pressure was increased by gravity when the recumbent position was assumed, and relieved when the sitting posture was taken.

*Second.*—The fibroid rising considerably above the pelvic brim tended to support the kidney or at least to prevent further prolapse. When the fibroid was removed and the support taken away the kidney prolapsed to an extreme degree and though the pressure on the ureter in the pelvis was relieved, the angulation of the ureter increased and the kidney pelvis became markedly distended.

CASE II.—Mrs. T. M., forty-one years old. Married ten years. Three children, youngest two years old. From the time of her maturity, dysmenorrhea was severe with an excessive menstrual flow lasting seven days. She was always more or less nervous and hysterical. She could not sleep on the right side because of distress from "something falling over from the left."

For ten years previous to marriage, there occurred periodic pains in the left lumbar region about every three months but no enlargement was noticed. The intervals of pain lessening gradually until at the time of her marriage, they recurred every six to eight weeks increasing in severity with each onset. She carried three conceptions to full term and about the fifth month of pregnancy in each instance, she was relieved of renal distress. After her labors, the pains recurred as before. She first noticed the enlargement in her side following the birth of the first child, eight and one-half years ago. The enlargement always disappeared after reclining for a few hours. After her first labor, the recurrent attacks with enlargement were



noticed about every two months. The intervals gradually diminished to every six weeks, one month and then three weeks. It was also noticed that the tumor, when it recurred, would be larger each year and it required a longer time in the recumbent position to reduce it; during the last year at least twenty-four hours were usually required to complete its reduction.

When the patient presented herself at my office, she informed me that her case had been diagnosed several years before as one of "floating kidney," but I was unable to verify the diagnosis. The

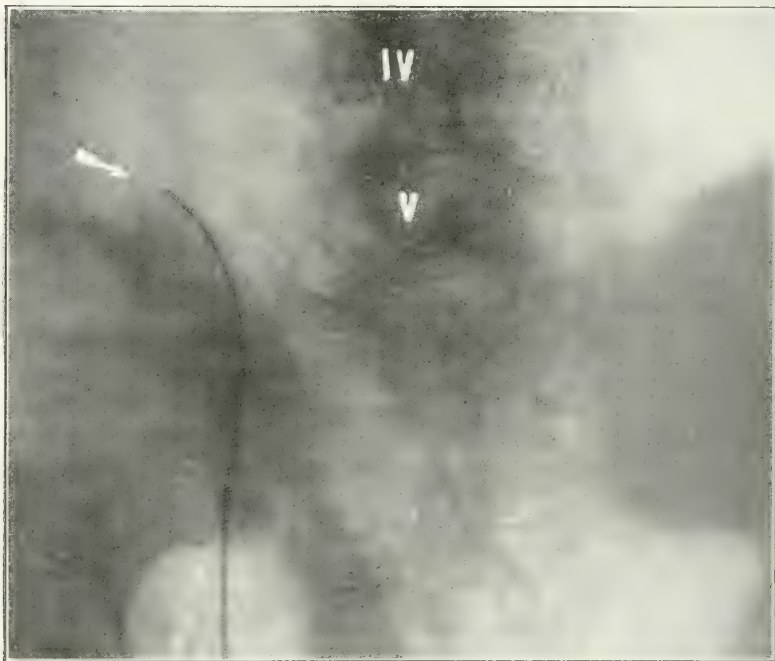


FIG. 11.—(Case II.) Irregular type of intermittent nephrectasis, the second case reported. The pressure on the ureter by the distended kidney was such as to prevent the catheter being passed beyond the crest of the ilium. The course of the ureter is here shown to be away from the vertebral column which is the exception to the rule.

lower pole of the kidney could be felt but the organ did not seem to possess abnormal mobility and I was unable to pass my hand above the upper pole.

Her symptoms, as then related, were constant eructation of gas, no nausea or vomiting. She was nervous and apprehensive but slept well and had no bad dreams. For six years she had been wearing an abdominal support without relief. Digestion was usually good and she was gaining steadily in weight. An intermittent enlargement in the left kidney region with accompanying pain constituted her chief complaint. Not being able to make a

diagnosis, I advised a radiogram; also should the tumor recur before a picture could be taken, I instructed her to summon me at once. A week or more after I saw her at my office, I was called to her bedside, where she had been confined for forty-eight hours with a large tumor mass extending from the diaphragm to the ilium and from the lateral abdominal wall to the middle line. I immediately transferred her to the hospital and had her catheterized and x-rayed.

Catheterization was incomplete as the instrument could not be passed beyond the crest of the ilium, but the flow of urine through the catheter was at intervals, perfectly clear and of low specific gravity. Percussion over the tumor showed resonance, but dulness in flank.

Notwithstanding the evidence obtained as to the renal origin of the tumor, doubt was expressed by council, and to determine positively its character an abdominal incision was first made over the same. The exploration through this wound although unnecessary was instructive, as the outlines of the retroperitoneal mass could be clearly followed from the diaphragm to the false pelvis, and an exact mental picture secured of the relationship between the greatly distended kidney pelvis and the descending colon.

The patient was then turned on her abdomen and the lumbar region opened. The distended kidney was aspirated and  $2\frac{1}{2}$  quarts of clear urine withdrawn. The upper pole of the kidney was found firmly fixed to the fascial structure in the region of the diaphragm and lower ribs and was dislodged with considerable difficulty.

Nephrectomy was successfully performed and the patient at the present time is enjoying perfect health.

According to the history of this case, there existed for many years a recognized prolapsed kidney. Accompanying this condition there doubtless existed also a displaced ureter. The greater curve of this displaced ureter may have been in a direction away from the vertebral column and as the kidney pelvis distended the outward position of the ureter became fixed. The catheter failed to pass beyond the crest of the ilium as shown by radiogram, probably because at that point there was a sudden posterior change in the direction of the ureter, due to the fact that the area above the ilium traversed by the ureter yielded to the pressure of the tumor and carried with it the ureter.

CASE III.—Mrs. J. C., aged forty-eight, married thirty-two years, eight children, four miscarriages. Menopause at forty-six. In October, 1915 she had a severe fall on the ice, immediately after which bleeding from the vagina occurred, with pain in back which became more or less continuous. There was also pain in the middle and lower abdominal region during the day, which she described as simulating labor pains. Relief was obtained only when she assumed a recumbent position.

Previous to her fall she remembers having had a persistent tired and sleepy feeling. At present she sleeps well, but invariably wakes just as tired as when she goes to bed. Appetite and digestion not good. Nauseated particularly at time of pain but does not vomit.



FIG. 12.—(Case III.) Regular interval type of intermittent nephrectosis. Dorsal position. A case combining three interesting features of the right kidney, namely hydronephrosis, nephrectasis and a large single cyst of kidney parenchyma. The enlargement of the kidney pelvis was probably due to the presence of a large single cyst which involved the greater portion of the parenchyma and acted in two ways. First, the presence of a body sufficiently large to force the ureter so far out of its normal course must have produced upon the ureter considerable pressure. In order for a normal amount of urine to flow through such a ureter the resistance produced by the tumor had to be overcome. Nature adjusted herself to the task gradually but at the expense of the kidney pelvis. Second, the extremities of the kidney pelvis were found to be so intimately related to the cyst wall that it was impossible to dissect away the tumor intact without entering the kidney pelvis. These two sacs may have been originally in close proximity and as the cyst grew the wall of the kidney pelvis extended with it. The entire abdominal portion of the right ureter is here deflected to a position in front of the spinal column. Such a deflection of the ureter with the kidney in practically normal position suggests the presence and the influence of a retroperitoneal tumor. The outlines of a distended kidney pelvis can be distinctly seen. 25 c.c. of thorium injected into the kidney pelvis occasioned the same character of pain as was experienced during interval attacks.

Twelve years ago she was supposed to have had gall-stones. Vomited bile on and off for ten years. Lost considerable flesh during the last year and is at present very thin. Frequency of micturition every two hours during the day and twice during the night.

Examination of right side showed a tumor extending from cecal region to umbilicus and rib, freely movable.

Cystoscopic examination showed slight urethritis and trigonitis. Catheters passed up both ureters, examination of both specimens negative, excepting uria on right side 11.3 per cent., left 20.5 per cent. Capacity of pelvis of right kidney, 25 c.c.

When thorium was injected into the kidney pelvis, the same character of pain followed as she had experienced for a year or more previously.

After the three radiographs here shown were taken and a diagnosis made of nephroptosis with hydronephrosis and cystoma of right kidney, the abdomen was opened directly over the mass. A large movable retroperitoneal tumor presented itself. The cecum and ascending colon were practically hidden from view but on retraction of the abdominal wall they were found displaced by the tumor inwardly. The peritoneum and fascial covering of the tumor were incised and the kidney with a single cyst about the size of a small grape fruit was delivered through the abdominal wound. The kidney was very movable which fact facilitated the following surgical procedure. The cyst was found to grow out of the convex border of the kidney and to displace the greater portion of the kidney substance in this region. It was found on dissecting away the cyst that its wall extended to and was in direct contact with the kidney pelvis.

A careful dissection was necessary in order not to injure irreparably the walls of the kidney pelvis, however, during this dissection two small openings were made in the pelvis which were immediately closed with fine catgut. The tumor was removed intact. In closing the kidney wound, which extended from pole to pole, several interrupted catgut sutures were made to penetrate deeply the opposing kidney surfaces. Two chromic sutures (No. 3) were passed completely around the kidney, one below and one above the hylum. On passing these sutures the fibrous capsule was penetrated at several points to fix the suture in position. Their free ends were passed through the muscle of the abdominal region and out through the skin and tied over a small bolster of iodoform gauze. These two sutures when tied prevented further hemorrhage by holding the opposite cut surfaces in contact and fixing the entire organ to the posterior wall. The fascial and peritoneal incision over kidney was closed. The patient made an uninterrupted recovery. Examination four months after operation showed a successful result both mechanically and symptomatically.

It is probable that there existed prior to the fall, all conditions found after the fall; namely, nephroptosis, hydronephrosis and a single cyst of the kidney. The fall undoubtedly occasioned a great strain on the pedicle of the kidney and because of this sudden drag



the symptoms which existed previously in a comparatively mild form, now became distressing. While this case must be classed as a regular interval type of intermittent nephrectasis it differs from the

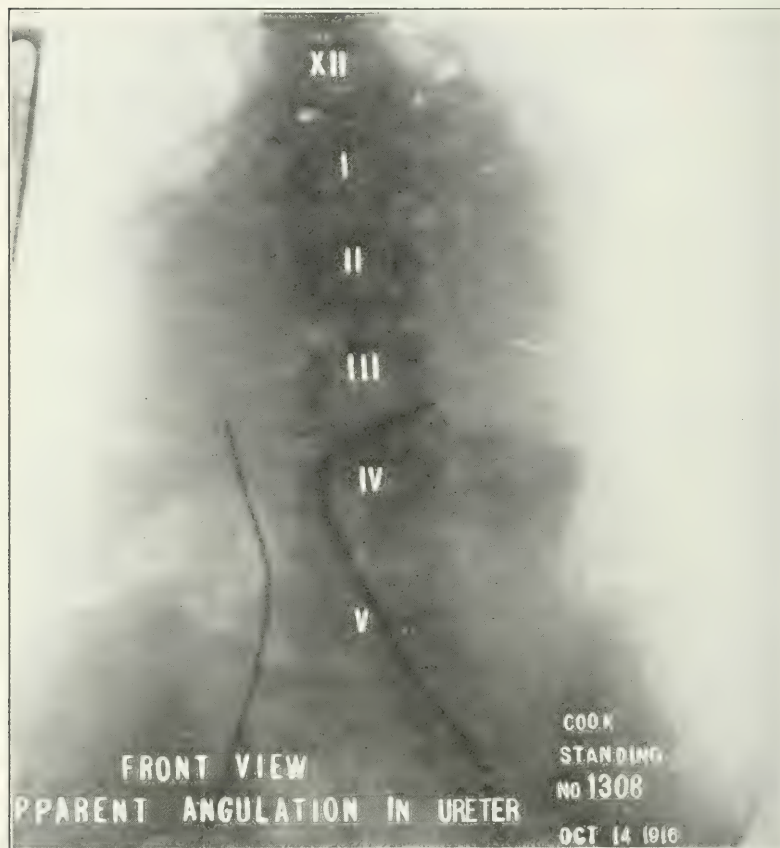


FIG. 13.—Study in upright position of Case No. III. An extreme degree of abnormal mobility of the right kidney and ureter. The range of mobility of the kidney is seen to be from the first to the fourth lumbar vertebra. The kidney pelvis is seen horizontal. The ureter has descended with the kidney and has been forced almost completely across the spinal column. After removing the large single cyst of the kidney the organ was fixed. Patient cured. If such a case occurred in a woman during the childbearing period and the cyst removed but the kidney not fixed, the hydronephrosis would continue to be a source of distress, and the ureter (patient in upright position) might assume practically the same abnormal position in front of the spinal column as is here seen. Under these circumstances the ureter would be exposed to the danger of pressure from the pregnant uterus.

first case related in that the obstruction of the urine was incomplete, that is the obstruction was not the result of an angulation of the ureter but of a general pressure on its abdominal or lumbar portion due to the tumor forcing it far out of its normal course.

The radiograms taken before operation show a most interesting situation. That taken in the recumbent position (Fig. 12) shows the kidney at its highest elevation and the influence of the tumor upon the position and course of the ureter. That taken in the erect or sitting posture (Fig. 13), front view, shows a marked prolapse of the kidney and a sudden change in the direction of the ureter. It also suggests that the influence of the tumor upon the direction and course of the ureter is such as to occasion greater pressure than in the



FIG. 14.—(Case III). Profile study in upright position. The right kidney is here shown well forward and opposite the fourth lumbar vertebra and the sharp curve seen in Fig. 13. A front view study of the same case is here transformed into a gentle curve with a forward direction. Incidentally the ureter of the left side is seen in contrast to be posterior to the vertical plane passed immediately in front of the spinal column.

recumbent position. That taken in the erect position (Fig. 14), a profile view, shows that the kidney with tumor has fallen forward and downward and that a more gradual curving of the ureter exists than is indicated in the front view.

The following case, though not complete, is reported because of the unusual radiographic study and the interest and value of its history taken with the foregoing cases. As the kidney lesion is structural, the result of an infection and as it is of long standing, progressive, and interferes seriously with the proper performance of her work,

nephrectomy is proposed. It is to be regretted that circumstances prevent the operation from being performed in time to include the findings in this report.

CASE IV.—Miss M. L., aged forty-one. Shows old scars of tubercular gland of the neck, which drained for six years and healed in 1904 by the administration of Lugol's solution.

In 1909 she contracted what she termed a severe cold and for three months was distressed with frequent and burning micturition. From 1909 to 1912 she had regular interval pains in the sacral region, these pains usually lasted two or three hours, were accompanied by a chill and followed by nausea and not infrequently vomiting. If she turned on her left side during these attacks, she would experience a feeling of discomfort or "drag" in the right lumbar region. The symptoms were suggestive of an appendicular involvement and in 1912 the appendix was removed. After this operation attacks were less frequent and less severe but continued to occur every month or two until June, 1917. From June to September, 1917, no attack occurred. During September, October and November attacks returned with greater severity and frequency, about every two weeks. The kidney pelvis was injected with thorium December 14, 1917. By this injection the same character of pain was created, greatly intensified a few hours later, for which she sought relief. Since that date she has had no recurrence of pain. Bowels, normal. Vesical symptoms, negative.

Cystoscopic examination (Dr. Bugbee) shows edema about mouth of right ureter, catheter partly obstructed at 15 cm. but entered pelvis at 25 cm. Very rapid flow of urine. Urine, pale, contains flakes. Left side, normal. Thirty cubic centimeters of thorium injected into the pelvis of right kidney. A radiograph showed a large pelvis with flattening of calyces.

Tentative diagnosis: tuberculosis of the kidney, pyonephrosis.

Examination of urine from the right side showed staphylococci but no tubercular bacilli. Urine from left side, normal.

With regard to the cause of attacks, she was of the opinion that they frequently followed a hard day's work and also at times when she was disturbed as the result of approaching menstruation. As evidence corroborating the first statement, it will be noted that she spent the months of June, July and August, 1917, without an attack. During these three months she was in the country with little or no work to do. The attacks returned, as previously stated, on the resumption of her work and frequently preceded menstruation. She has had no attack since the pelvis was distended with thorium, which she attributes to the fact that since the discovery of the kidney lesion her employer has been most considerate and the work required of her has been greatly lessened.

This history suggests several elements as probable factors in the causation of attacks. First, working in the upright position seemed to have some definite connection with the attacks, as she was absolutely free from them for three months when not so engaged. Second, the attacks occurred not infrequently at about the time of men-

stration. These two facts suggest engorgement of the vessels of the internal genital organs, with resulting pressure on the lower ureter, but more suggestive to my mind than this is a resulting engorgement of the kidney from standing and an increased output of urine from nervous excitement.

The sudden posterior change in the direction of the upper part of the ureter could, because of the evident fixity of this area, be converted into a definite obstruction to the urine stream on even a

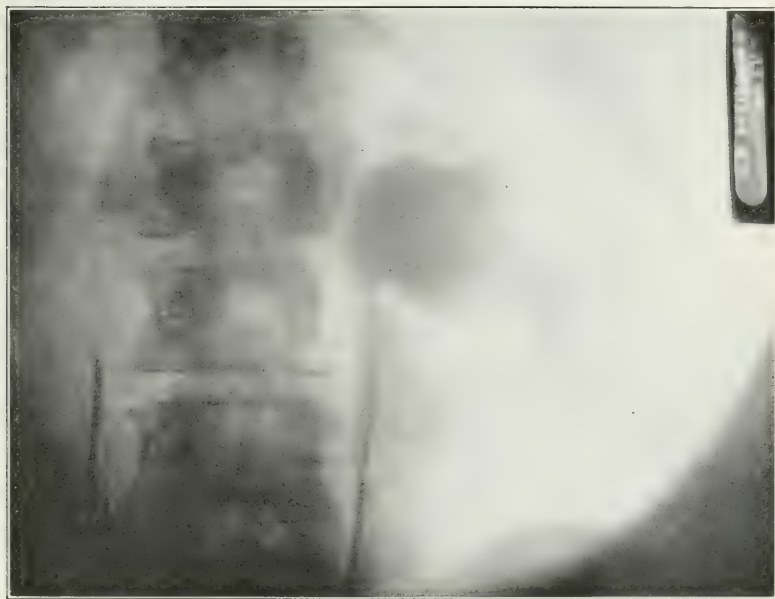


FIG. 15.—(Case IV). The irregular interval type of intermittent nephrectosis. Dorsal position. Pyonephrosis of the right kidney with considerable distention of the kidney pelvis. 30 c.c. of thorium injected into the pelvis occasioned the same character of pain as was experienced during the interval attacks. There is marked irregularity of the upper portion of the ureter, beyond which the catheter could not pass. Beyond the tip of the catheter there is a deficiency shadow, suggestive of a sudden change posteriorly in the direction of this portion of the ureter and a lessening of its calibre. This change in direction is probably the result of fixation of a limited area of surrounding cellular tissue which lost its elasticity as the result of pyonephritis or pyelonephritis.

slight descent of the kidney, if this change of position was of considerable duration.

The thorium injected into the ureter and pelvis of the kidney was more serviceable in giving the true course of the ureter and position of the kidney, than if the catheter alone had been used, even had it passed through the entire ureter and entered the kidney pelvis.

The obstruction in the upper ureteral area where the shadow is deficient, may have been the result of the infection within the kidney or kidney pelvis; that is, an area of cellular tissue in the region of the



upper ureter may have become, at the time of the infection, so involved as to lose its elasticity, and by contracting, limit the capacity of the ureter in that immediate vicinity, or act as a factor in the formation of an angle by preventing a change of position of the ureter, with change of position of the kidney.

The shadowgram (Fig. 15) was taken with the patient in the recumbent position. The upper portion of the ureter is outlined

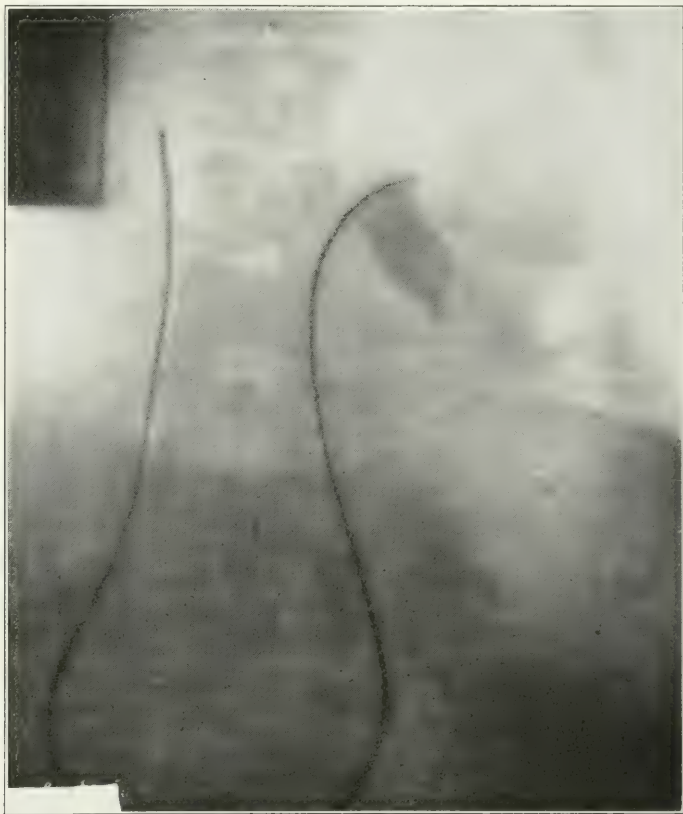


FIG. 16.—X-ray picture of patient (Case IV) in erect position with 8 c.c. of thorium injected into kidney pelvis. Kidney in a lower position than in Fig. 15. Catheter has passed the constriction.

by thorium only. It is to be regretted that a picture was not secured in the standing posture at the same time, in order that the change, if any, occurring in the tortuous section of the ureter might have been determined.

Six weeks after Fig. 15 was made and three hours before nephrectomy was performed, thorium was injected into the kidney pelvis (but a smaller amount than here used) and a shadowgram made in the erect position. This showed (Fig. 16) that the catheter

here passed the constriction in the upper portion of the ureter and in so doing eliminated the irregularity in the course of the ureter. The kidney pelvis, less distended than before, only 8 cm. having been injected, is seen to have assumed a lower position, and the upper portion of the ureter shows a gentle curve. The influence of the change of position of the kidney on the tortuous portion of the ureter was therefore not determined because of the influence of the catheter.



FIG. 17.—(Case IV). X-ray of kidney out of the body showing the degree of normal capacity of the kidney pelvis (30 c.c.) and area of constriction at juncture of ureter and of kidney pelvis.

Although this change of position of the kidney, may have tended to make more pronounced the constriction in the upper portion of the ureter, I am of the opinion that the low position of the kidney in this individual case, did not play an important part in the causation of nephrectasis, and that the chief factor was the constriction of the ureter, which existed in all positions. The influence of this factor being constant, there was in consequence, a state of chronic

distention of the kidney pelvis. This view is supported by the following facts:

(1) When the ureteral catheter was inserted, the urine which escaped seemed to be under great pressure.

(2) At the time of operation, the pelvis was found markedly distended and remained so even after considerable handling of the organ. Contents measured 30 c.c.



FIG. 18.—(Case IV). Shows the posterior surface of the kidney on which is seen a tumor containing pus and a phosphatic concretion. This tumor was an arrested tubercular process. In the pelvis of the kidney there was imbedded a second phosphatic concretion. In the parenchyma of the upper pole an active tuberculous process was discovered. The outlines of the pelvis and the upper portion of the ureter in this photograph are as when the organ was removed from the body and show the angulation at the juncture of the ureter and the distended pelvis.

Operation, Feb. 1, 1918. The kidney was found with limited mobility, and with numerous resisting bands of tissue surrounding it. These were with some difficulty freed, and in most instances had to be cut. The bands about the upper portion of the ureter were particularly conspicuous. No accessory artery was discovered. The ureter was freed down to the pelvic brim and was here encircled by a ligature of plain No. 2 catgut. A small clamp was placed a little above the ligature and the ureter cut between. The renal vessels were ligated with plain No. 2 catgut and the kidney re-

moved. The manipulation necessary to free the kidney and the ureter did not seem to lessen the distention of the kidney pelvis. This fact would suggest the existence of another ureteral constriction which corroborated Bugbee's observation of a constriction met by the catheter 15 cm. above the bladder.

CASE V.—Mrs. C., aged thirty-nine. First seen Sept. 6, 1907. Gave a history of having pain in the region of the right kidney for fifteen months. This pain recurred at irregular intervals



FIG. 10.—(Case VI). Irregular interval type. The distention of the kidney pelvis is here due to stone partially obstructing the flow of urine. Kidney is fixed as the result of an inflammatory process.

of from one to three months and usually lasted several days. A chill accompanied each attack. No pus, blood or "gravel" was seen in the urine until two months before she applied for treatment, when these appeared with painful micturition. More or less distress in the region of the appendix.

Vaginal examination showed a pronounced thickening of the vesical portion of both ureters. On bimanual examination pain was elicited in the deep pelvic region. Urine showed large amounts of



pus and blood. Radiograph showed a shadow along the entire line of the pelvic and vesical portions of the right ureter. Near the middle of the pelvic portion, the shadow was intensified. No shadow in the kidney regions. Neither of the ureters could be catheterized because of the engorgement about mouths. Diagnosis: Impacted stone in pelvis of right ureter.

Operation, Sept. 10, 1907. Through a median abdominal incision an impacted phosphatic stone (1.5 cm. in length, 0.75 cm. in thickness, weight  $4\frac{1}{2}$  grains) was removed from near the middle of the pelvic portion of the right ureter. After removing the stone, a catheter was passed through the ureteral incision upward to the kidney and  $3\frac{1}{2}$  ounces of thick purulent fluid was drained from the kidney pelvis. The catheter was then passed downward into the bladder. As it met with no obstruction the ureteral incision was closed. The appendix markedly diseased, was removed. Urine drawn from the kidney pelvis showed staphylococci, no tubercular bacilli. The patient made an uneventful recovery.

Eventually, the kidney had to be removed because of a tubercular invasion. This case was reported in full, with illustrations, before the American Gynecological Society, May 26, 1908.

CASE VI.—Miss W., Aged forty-nine. Discomfort in region of right kidney for twelve years. Physical examination ten years ago, previous to the operation to be described showed a large movable, tender, right kidney. There was no stone, but colon bacilli and a considerable amount of pus. Interval pains were noticed during the past ten years and, when examined two years ago, the right kidney was found to be fixed. Urine was practically the same as before. X-ray Jan. 4, 1917, showed multiple stones in the pelvis and parenchyma of the kidney. Operation Jan. 18, 1917, nephrectomy. Kidney pelvis found distended and contained several large stones. One of them fitted closely the ureteral opening. Two or more stones in the kidney structure.

Nephrectasis as the result of calculi in the pelvis of the kidney or ureter is, of course, not infrequent. This case, as the previous one, is used only to illustrate a more or less common type.

A case of spontaneous rupture of the right ureter, due to the presence of a calculus with extravasation in the perirenal area could with interest and profit, be reported in this discussion. Intermittent distention of the pelvis of the kidney probably existed prior to the accident but no history could be secured of interval pains and as the initial distention was probably immediately before the ureteral rupture, this case must be considered an acute with rupture and not an interval type. Dr. F. A. Dorman and myself are to report this case in full at some future time.

I wish to acknowledge the valuable service rendered by Dr. Bugbee of the Urological Department and Dr. Law of the X-ray Department of the Woman's Hospital in this study.

## HYPERNEPHROMA OF THE KIDNEY.

BY

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(With three illustrations.)

HYPERNEPHROMATA have in general such striking characteristics that a recent case is here reported to analyze some of their features. The patient, a married woman of forty-three years, entered the Woman's Hospital on the service of Dr. Pinkham early in October, 1917. Somewhat over a year previously her attention had been attracted by a pain in the left abdomen, most noticeable on walking. Subsequently she had noticed a mass in this region but this had caused her no anxiety until the last six weeks, in which time it had increased considerably in size. She had recently lost much weight and strength.

According to her own statement there had been some signs of heightened sexual feelings, which she noticed during the growth of this tumor. Upon physical examination an indefinite mass was felt in the lower abdomen, extending into the pelvis. At the operation it was evident that the tumor involved the kidney and that it was located at the lower renal pole. The kidney itself was felt to be in the normal location; its upper margin was under the ribs, and no tumor was associated with that portion. The adrenal gland was not observed and it may be inferred that it was not enlarged. The colon lay to the outer side of the tumor, which extended into the pelvis. The ureter and renal vessels were ligated close to the pelvis and the tumor and kidney removed *en bloc*.

The kidney, with tumor, measures  $19 \times 9 \times 6$  cm. The tumor is entirely within the capsule of the kidney, occupies one pole, the lower, and is  $9 \times 9 \times 6$  cm. in diameter. It appears largely cystic. The ureter and vessels are cut off close to the pelvis, so that their direction cannot be ascertained. One or two discrete nodules of tumor are seen beneath the capsule, apparently in the cortex of the kidney (Fig. 1).

On section the kidney appears normal in its upper half. The capsule peels smoothly, the pyramids and cortex appear normal. The kidney substance thins out over the tumor at the lower pole, suggesting that the latter originated in the pelvis, had greatly dilated this and had replaced all but a shell of the kidney tissue in its lower half. The main portion of the tumor is a hemorrhagic cyst; its solid parts consist of a yellowish, friable, cellular tissue divided into globular masses. Sections from the transitional areas and from the

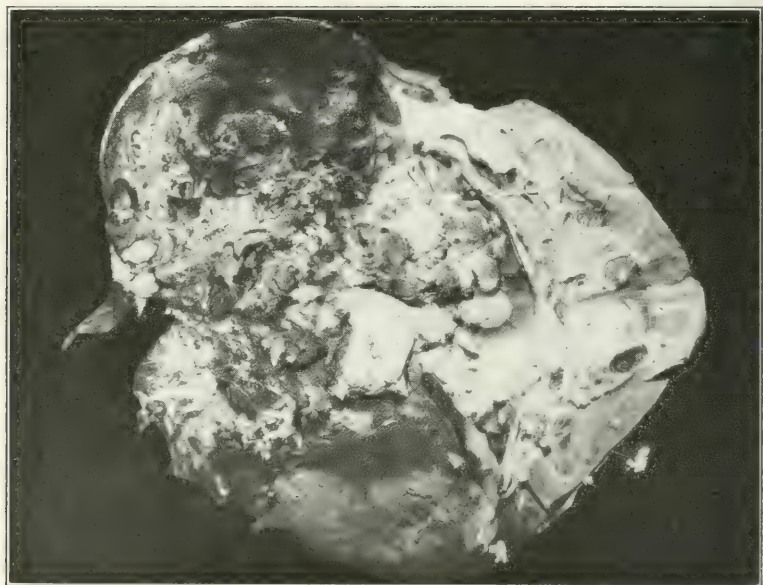


FIG. 1.—Hypernephroma of kidney.

tumor mass were taken in Zenker's fluid, formalin and for frozen sections. The latter when stained with Schälarch R. gives a copious fat reaction in the cells of the tumor itself. No glycogen was demonstrable microscopically.

One section shows renal tissue with hyperemic glomeruli. The collecting tubules in certain regions contain casts. Section of the tumor proper shows a uniform type of cells which are large, with small central nuclei and a large amount of faintly staining protoplasm. The cells contain large fat globules. These cells are arranged in strands of 3 to 4 cells wide, bounded by very delicate connective-tissue septa. These strands are indefinite and sometimes bound polyhedral aggregates of cells. A large number of capillaries

run between these cell masses; these show no endothelial lining, and their walls are no more than the delicate connective tissue seen in the septa or else formed by the specific cells of the tumor. There are also a small number of epithelial cells with a smaller amount of protoplasm which contain no fat. These occur in the form of small islands.

The characteristic large, pale, fat-containing cells, arranged in somewhat fasciculated form, with a minimal amount of connective tissue, and the thin-walled capillaries determine the tumor to be a hypernephroma.

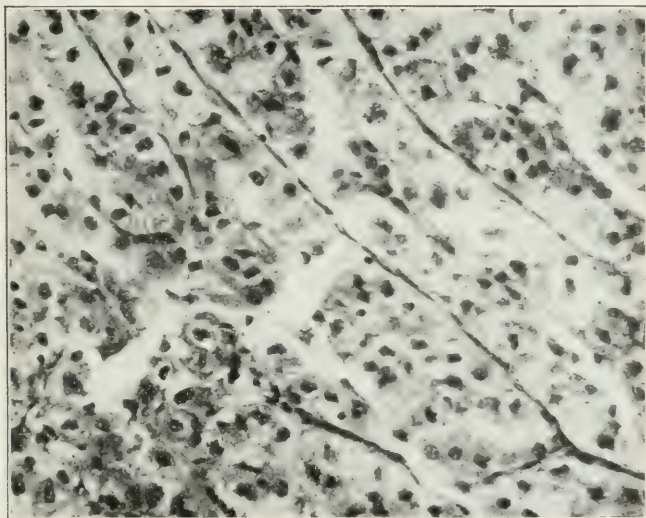


FIG. 2.—Columns of cells in hypernephroma.

The transitional areas show a very dense and broad connective-tissue band separating the tumor from the atrophic kidney substance. This band appears to have arisen from atrophy of the renal elements, and the tumor appears to be inside the capsule of the kidney and to have an origin in the pelvis. There are metastatic nodules in the broad connective-tissue septum, but at no place is there direct extension of the tumor into the renal parenchyma.

From its location at the lower pole, its origin in the pelvis and its enclosure within the capsule of the kidney the conclusion may be drawn that this is a hypernephroma arising from an accessory adrenal and not from the normally situated left adrenal (Fig. 2).

It is possible that the normally situated adrenal is the site of a



primary adrenal tumor from which this is a metastasis, but this is very unlikely from the operative findings.

Accessory adrenals are not uncommon, and there is a definite embryological explanation for their occurrence. Of the two tissues making the adrenal the cortex may be regarded as the true or original tissue, since it develops as a ridge of cells from the celom epithelium.

The chromaffin tissue, which forms the medulla, is really a foreign ingrowth, as is seen in batrachians where the two occur as separate structures.

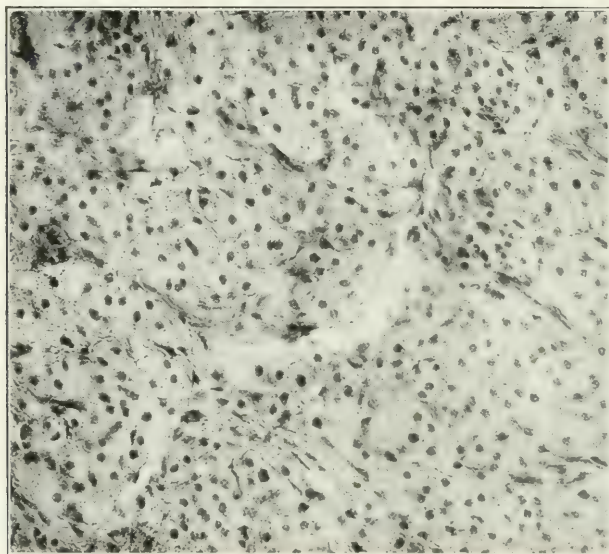


FIG. 3.—Aberrant suprarenal in mesosalpinx.

The immigration of these sympathochromaffin cells produces a cleavage of the surface of the adrenal, as a result of which there may be a separation of greater or smaller portions of the gland.

The accessory suprarenals either remain in the vicinity of the principal gland, or they may eventually be situated far away, if they become associated with organs that alter their position. Common sites are on the spermatic vessels, ligamentum latum, epididymis and epoöphoron. An instance of the latter site was found in a tumor less than a millimeter in diameter in the mesosalpinx of a case of salpingitis operated at the Woman's Hospital (Fig. 3).

The accessory glands consist for the most part of cortical substance only, yet the fact that they occasionally also contain medul-

lary substance, shows that their separation is frequently due to the sympathochromaffin tissue. Another cause of accessory glands is the separation of cortical portions, which form nodular projections on the surface of the adrenal. They are not adenomata though they have been so regarded.

In looking over the literature of hypernephromata it is quite evident from the description that many if not most of them are tumors of accessory adrenals as is the present case. It would seem plausible to expect that heterotopia would have a relationship to tumor formation, though the actual cause is obscure.

A normally situated suprarenal gland may have accessory portions on its surface or interior, and these may form hypernephromata or may remain quiescent. It appears altogether probable that most hypernephromata are derived from aberrant or accessory glands and not from otherwise normal adrenals. The classification of these tumors has given rise to some discussion in the past, due to the fact that some writers regarded them as of renal rather than adrenal origin. This was due to their frequent location in the kidney, but this is now explained as a heterotopic process. As to their histology they present the picture of an exaggerated adrenal tissue which is to be expected from their hyperplasia.

Microchemically they show glycogen and lipoids as do the adrenals themselves, while finally they produce at times the same physiological effect as the internal secretion of the adrenal cortex.

The term hypernephroma seems quite satisfactory for these tumors and replaces the older designation of adenoma. It is quite evident that the suprarenal is a gland of internal secretion and that it does not form glandular lumina from which an adenoma might arise. Its outer layer is termed glomerular because the cells there are arranged in somewhat globular form and not in columns as in the fascicular zone. These globular masses may have spaces in their centers and this form appears sometimes in the hypernephromata.

This has given rise to the use of the term adenoma which might better be restricted to true glands. The difference is plain when one considers that in true glandular tumors the first stages are always tubular, adenomata, with a later appearance of solid masses, while in the suprarenal tumors the first appearance is the solid cords with a late simulation of a glandular structure. Another mistaken idea was to consider these spaces indicative of an endothelioma, since they often contained blood. The capillaries of the suprarenal are very delicate and blood will readily fill such spaces. The cells composing the walls are but the characteristic hyper-

nephroma cells. The hypernephroma cell represents a greatly exaggerated suprarenal cell, as is to be expected from the hyperplasia.

The second particular of interest in hypernephromata lies in the peculiar physiological effect that they sometimes produce. In this case it was no more than suggested by an unexpected and unsought statement on the part of the patient about her sexual activities.

But the literature of hypernephromata affords some very striking cases of sexual precocity or heightened activity.

These are very interesting evidences of hormone formation by neoplasms of ductless glands, other instances of which are seen in the gigantism occurring in tumors of the pituitary.

In general, tumors are functionless, but if the cells of glandular tumors preserve their differentiation they may secrete to an enormous degree.

The hypernephromata often appear only as hypertrophies of histologically normal suprarenal tissue, so that it is not surprising that their secretion should be hyperactive. Just as the adrenal medulla is absent in these tumors so adrenalin is not evident in any heightened action, but the effects that so occur are such as would be expected from the cortical hormone, that is, exaggerated secondary sexual characteristics.

The internal secretion of the adrenal cortex is regarded as quite analogous to that of the pituitary anterior lobe.

The corpus luteum is another gland which may be grouped with the adrenal and pituitary on account of the internal secretion which affects the sexual life. Here also there are large pale cells secreting an abundant quantity of lipoids. It has been suggested that the adrenal is derived from celom epithelium as is also the ovary, and that this explains the relationship between adrenal and corpus luteum. But many other unrelated structures have a similar origin. There are no neoplasms of the corpus luteum, with the exception of simple cysts and the lutein cysts of chorionepitheliomata, and no disturbances of function occur in these.

There have been some instances of teratomata with precocious sexual development, and one instance of a teratoma in a man, associated with lactation.

Teratomata are regarded as tumors of blastomeres. The origin of the sexual stimulus in these cases is problematical, although it is probable that the normal fertilized ovum does in some way influence pregnancy.

ON A CASE OF UTERUS BICORNIS WITH RUDIMENTARY  
HEMIATRETIC HORN.

BY

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(With five illustrations.)

MALFORMATIONS of the uterus are of such frequent occurrence that every contribution to this chapter of pathology deserves proper consideration in regard to the morphology of the case as well as to its explanation. The case to be described below is an anomaly which, on account of the difficulty of its classification required a rather extensive search for similar cases in the literature. I shall first give an abridged history and anatomical description accompanied.

Mrs. I. S. Path. No. 14214. Attending Surgeon, Dr. Dougal Bissell. Patient is nullipara. She started to complain of pains in the right side nine months before operation (three months before marriage). There was also pain during intercourse and increased menstrual flow during the last six months.

At the laparotomy an ovarian cyst was found and a tumor in the region of the right tube corner. Both were removed without difficulty. The patient made an uneventful recovery.

The pathological specimen shows a cyst of the ovary, 6 cm. in diameter with serous contents. A portion of the other ovary is of normal appearance.

A globular tumor (Fig. 1) of 3 cm. diameter has a stout, very short pedicle which apparently was attached to the uterus in the region of the round ligament. On section, one notices an irregular cavity of 2 cm. diameter, filled with grumous inspissated blood (Fig. 2). The inner lining of the cavity which appears to have no communication with the surface is a corrugated yellowish mucosa. The wall of the cystic body measures from 4 to 6 mm. in thickness and is apparently composed of smooth musculature.

*Microscopical Description.*—Sections of the wall of the tumor show bundles of regularly arranged musculature. Certain bundles are cut transversely, others longitudinally (Fig. 5). A high columnar epithelium lines the cyst cavity and sends tubular glands into the inner muscular coat. Certain glandular lumina located in the same



place show the same type and arrangement of the epithelium as the ones described above (Fig. 3). Underneath the epithelial lining one finds collections of large cells carrying a brownish pigment. This pigment is free from iron as certain special stains show. This, of course, does not speak against the hematogenous origin of the pigment since hemoglobin, after certain chemical changes, loses its iron component.

In order to explain the special features of the case one has to remember certain fundamental embryological data which I shall mention briefly. Tubes, uterus and most probably the upper portion of



FIG. 1.

the vagina originate from the Muellerian ducts, which in the second month of development approach each other to form the sexual cord. This cord presents a double canal, the septum between the two lumina disappearing during the sixteenth week of development. Since the corpus uteri develops from the horizontal (tubal) portion of the Muellerian duct, it is understood that any failure of the epithelial and mesenchymal parts of the duct to shape themselves into the permanent normal form will produce an accentuation of what one calls horns of the adult uterus. These two horns unite, in such cases, at a more or less acute angle, with or without persistence of the septum (Uterus Bicornis Septus, Subseptus, Introrsum Arcuatus). At

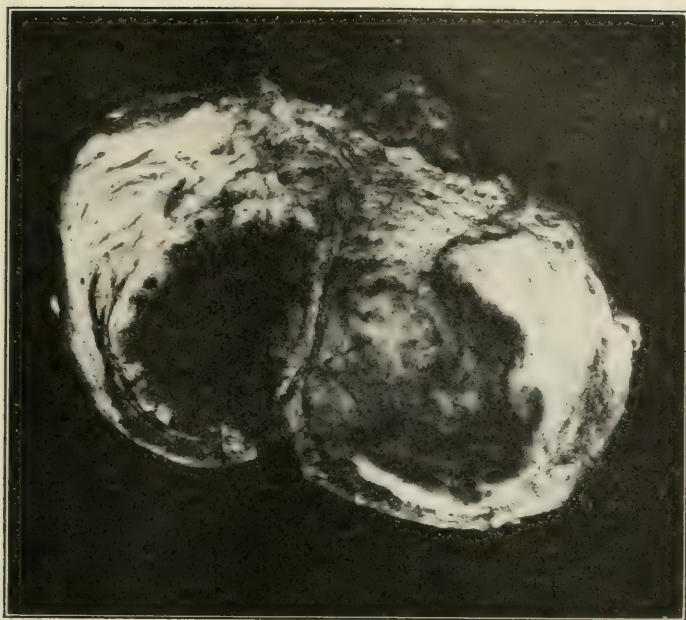


FIG. 2.

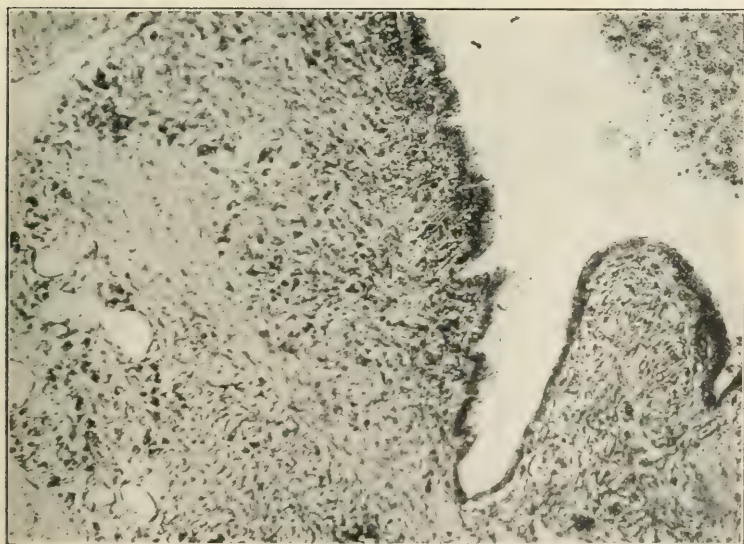


FIG. 3.

this stage, however, the two Muellerian ducts have united to such a degree that the term "Double Uterus" or "Uterus Didelphys," so frequently applied to this anomaly, is inapplicable. As long as the myometrium and serosa are insufficiently developed around the epithelial canal to allow a distinction between permanent tubes and the uterus, one must assume the point of attachment of the ligamentum inguinale (Hunteri) as a border line between the two organs. Any structure mesial to this point belongs to the uterine portion of Mueller's duct. The series of persistent embryological malforma-

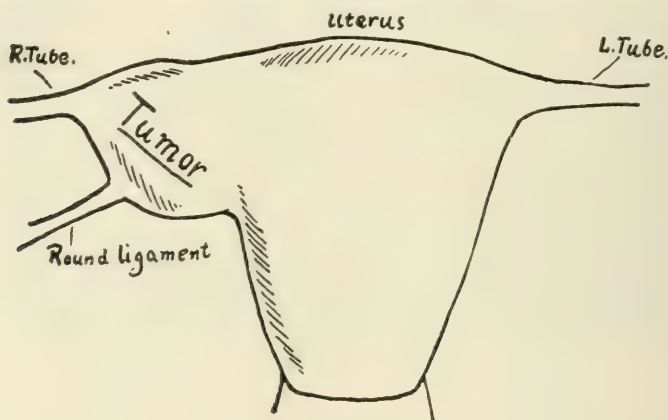


Fig. 4.  
(Schematic.)

Fig. 4.

tions, starting with the uterus planifundis as the most insignificant change, would be as follows: (Taken from v. Winckels Classification.)

Uterus arcuatus (septus, subseptus, simplex).

Uterus bicornis (septus, subseptus, simplex).

Uterus unicornis cum rudimento cornus alterius (according to Menge uterus bicornis with rudimentary development of the other horn).

Uterus rudimentarius partim excavatus.

Uterus rudimentarius solidus.

Uterus didelphys.

According to v. Winkel's researches the malformation in our case must have occurred before the third month of development. Malformations of symmetry, as usually found in the (adult) female are easily explicable from the foregoing considerations. Asymmetrical development (or possibly regression?) are difficult to explain or classify.

From the morphological description of the uterus in question it is fairly certain that the mucous lining as well as the muscularis correspond to those found in postnatal uteri. There was, however, a portion between the main uterine body and the tumor mass attached to it that showed no lumen. The uterine canal was atresic in this intermediate part between uterine cavity and the cavity of the attached mass (therefore "hemiatreticus").

The presence of grumous blood in the cavity and the pigment in the mucosa can be explained only on the assumption of occasional hemorrhages probably of menstrual origin. Hemiatretic cornua

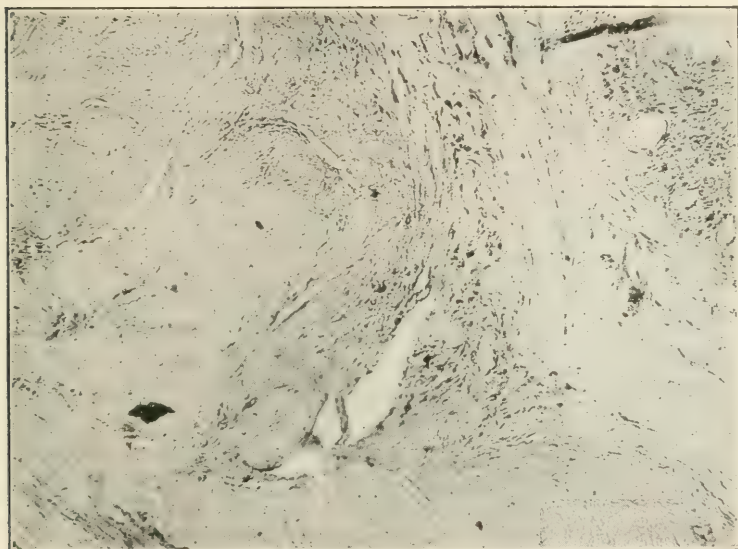


FIG. 5.

sometimes menstruate but often fail to respond to the stimulus causing menstruation in the main body of the uterus. The rudimentary development of one cornu is of frequent occurrence but in that case the main body of the uterus shows marked asymmetry. Such asymmetry, however, is denied by the surgeon who obtained the specimen by operation. Our case is, therefore, difficult to explain and it is necessary to support our assumption that the tumor is a rudimentary horn, by exclusion. The tube of this side arose from the lateral apex of the tumor opposite the attachment of the latter to the uterus (Fig. 4). The round ligament was found to be underneath the tumor. The histological data leave no doubt as regards the uterine character of the tumor. It is to be regretted



from the standpoint of elucidation of the case, that the main part of the uterus was not obtained by operation, otherwise one would have had a chance to examine the uterine canal and the myometrium for possible signs of an abnormal or asymmetrical form. It is, from a search among precedents of such cases, improbable that such typical myometrium should have developed around the isthmic part of the tube. Mucosa, glands and the position of the round ligament speak also against this assumption.

With our present knowledge of the pathology of development, it is impossible to throw any light on the causes of maldevelopment of the derivatives of the Muellerian duct. Most cases of uterus bicornis and didelphys (the latter occurring only in pathological feti, not in adults) show an abnormally broad pelvis which would account for the failure of the Muellerian ducts to fuse into its normal adult shape. The enormous frequency of malformations of these pelvic organs is probably due to the radical changes of position and configuration they undergo during the various periods of development. Their relationship to temporary fetal organs (mesonephros) is an additional factor in explaining the frequency of their occurrence.

103 EAST EIGHTY-SIXTH STREET.

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## PERFORATION OF THE VAGINA BY A PAPILLARY CYST OF THE OVARY.

BY

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(With two illustrations.)

PAPILLARY cystomas of the ovary, while not rare, are encountered but infrequently, and are, therefore, looked upon with interest by every operator. When carcinomatous processes are found with the papillations the surgeon's interest, from a prognostic point of view becomes keener. Perforation of a hollow viscus by such a tumor, according to the literature, is very rare, and, therefore, a record is here made of this case of perforation of the vagina by a papillary cyst of the ovary.

The case is unique in my experience. A diagnosis of a cervical carcinoma was made but the error rectified at the second examination, as the cervix was shown to be free from disease. The neoplastic mass filling the vagina was seen to be situated behind the

cervix, having its origin on the vaginal wall in the region of the cul-de-sac of Douglas. The nature of the new-growth was not clear at that time and, as the subsequent history of the case developed, its true nature could not have been surmised.

Tumors of the ovary have always been looked upon by clinicians as benign neoplasms. When associated with papillomatous growths or when papillomas have invaded the cavity of the cystoma, they have been viewed with suspicion and by some surgeons have been classed as positively malignant tumors. The reason for this is the clinical fact that like carcinoma, papillary cystadenomas may cause ascitis, they are often bilateral and like carcinoma may become disseminated over extensive peritoneal surfaces, in the form of cauliflower excrescences. Both may be accompanied by a degree of malnutrition and emaciation difficult to differentiate from true cachexia. Positive proof that simple papillary cystadenoma are not malignant, is furnished by the fact, which is attested to by many surgeons of experience, that the removal of these tumors is followed by a complete and permanent recovery, notwithstanding that at the time of the operation there was ascites present and numerous points of metastases on the intestines and other portions of the peritoneal cavity. This is in contradistinction to carcinomatous metastases, for these preserve their destructive tendencies whether the original tumor is removed or not. Pfannenstiel has shown after a careful study of the subject, that papillary ovarian cysts are benign neoplasms, their growth is slow though progressive, a destructive tendency of the implantations is lacking, they do not give rise to true cachexia even in the advanced forms and they do not recur after a radical removal by operation.

*Types of Tumor.*—Ovarian growths with papillations, while presenting a group of neoplasms which clinically are well defined and have many characteristics which are peculiar to them, cannot be placed in a class by themselves. Pathological studies have shown that different kinds of ovarian neoplasms may have papillary growths on their surface or on the wall inside of the cavity. They are, therefore, not a type of tumors peculiar to themselves. A serous cyst of the ovary either small or large, may have papillations on its surface or inside the cavity. The same is true of the pseudomucinous cysts of the ovary. This fact alone will not permit the classification of these tumors by themselves and, although many authors have attempted to do this, the classification has fallen down upon this very point, namely: papillations may be found on both kinds of ovarian cystomas.

The number of papillations that are encountered on ovarian cyst, is extremely variable. In some cases the papillations are very few, merely a few excrescences here and there, while in others the papillating masses are larger than a grapefruit, or they may be so massive as to fill the abdominal cavity. This holds true for both, whether on the surface of the tumor or inside the cavity. Olshausen has shown that the larger the ovarian tumor, the smaller the number of the papillations. In the very large tumors the papillations may be very scanty and are more likely to be at the hilum of the ovary rather than on the free border.

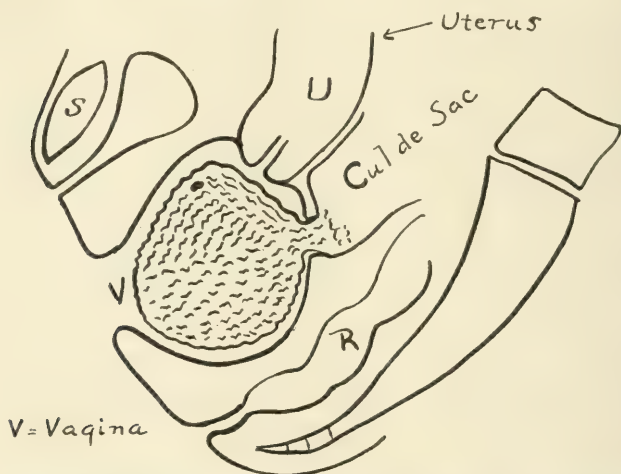


FIG. 1.—Diagrammatic section of pelvis showing invasion of vagina by tumor perforating through cul-de-sac.

*Histology.*—Papillary growths of the ovary are very interesting histologically. The excrescences consist of connective tissue covered by epithelium. The connective tissue, however, forms only the framework upon which the epithelium rests. In other words the whole growth consists of epithelial cells but the cells are arranged in a definite plan upon a framework of connective tissue, which carries the blood and lymph vessels. These papillary growths are very vascular. An examination of the earliest stages of these growths shows that they consist of an astounding degree of proliferating epithelial cells. As these cells multiply they push forward, bringing with them a basement layer of connective tissue. In this manner they form branches, which again rebranch and thus as it were a tree is formed. On account of the histogenesis, these tumors might be termed papillary epitheliomas, the latter term, however,

is associated with carcinoma and, therefore, the term papillary adenoma was given to them because a microscopic cross-section resembles glandular structure.

The color of the papillations is as a rule reddish, but may shade off into a grayish tint. The variations are due to hemorrhages into the substance of the tumor or to necrosis. In some places one can observe yellow stains on the surface of the tumor due to fatty degen-

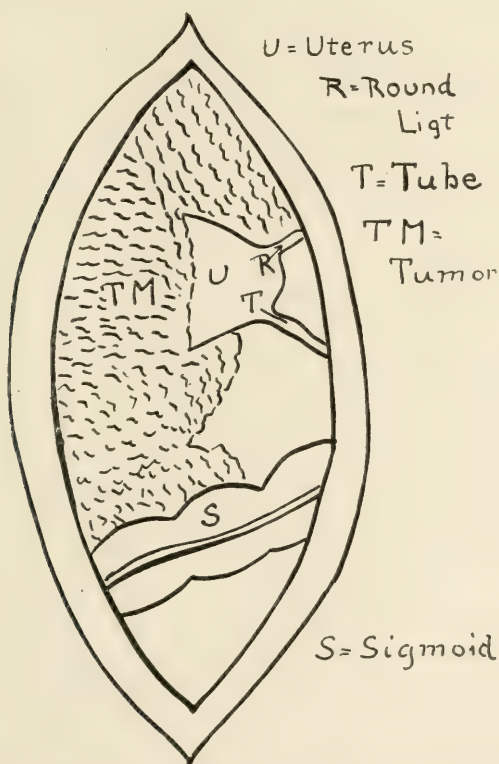


FIG. 2.—Diagram showing location of tumor viewed through laparotomy wound.

eration. Very frequently one sees calcareous deposits on the surface of the papillations, the so-called 'psammon bodies.' These bodies are not the result of a degenerative process, but are a part of the so to say 'biologic process' of the papillary formations. These bodies must not be mistaken for the calcareous incrustations found on the papillary masses that have undergone necrosis.

It is of interest to note here that on account of the frequency with which calcareous incrustations are found in papillary adenocarcinoma



of the ovary, these calcareous masses have been looked upon with suspicion, as they may be related in some way to carcinoma of the ovary. Some authors have gone so far as to name these neoplasms psammocarcinoma. This is certainly not the case and it would be an error to so classify them, for such a classification may lead to harm in adopting or failing to adopt proper and effective therapeutic measures. There are benign papillary growths of the ovary with calcareous masses and there are malignant papillary growths with calcareous incrustations, but one pathological state has nothing to do with the other.

The papillations found on various types of ovarian tumors are the result of a biologic process which is apart from that of the cystoma upon which they develop. The papillations are the result of an extraordinary tendency of the surface epithelium to proliferate. On account of this tendency, the cell-production becomes enormous, every available space is filled up, nor is the cavity of the neoplasm spared from invasions. The cavity of the tumor may become soon filled with larger masses of proliferating cells and, on account of lack of space, the cells begin to suffer various degenerating processes. They become flattened, undergo necrosis, fatty degeneration, calcareous changes, etc.

In some papillary tumors the connective tissue cells, the basement cells upon which rests the epithelial cells, show a marked tendency to proliferate. The result is a papillary tumor which is firmer in consistency than the type of papillary tumor in which the epithelial cells predominate.

There has been a great difference of opinion among writers as to the frequency with which the carcinomatous processes that are found in cystomata of the ovary are of primary development or are the result of a carcinomatous degeneration. If under 'carcinomatous degeneration,' we understand cases where fully developed adenocystomas after years change their character and become carcinomatous, then the cases conforming to this view have been very few and far between. There are ever so many cases on record of fully developed adenocystomas of the ovary that have existed for many years in women advanced in years, that have become of enormous size and yet on their removal have shown no carcinomatous changes. On the other hand, there are small ovarian cysts that have been known to have existed but a short time, where adenocarcinoma is found and the cancerous process must have developed coincidentally with the cystoma. It is therefore essential to keep these two pictures separate. Primary carcinoma in a cystadenoma of the

ovary and carcinomatous degeneration are two distinct conditions; one has nothing to do with the other. If a carcinomatous change of a comparatively early date is found in a fully developed cystadenoma, then it is clear that 'carcinomatous degeneration' has taken place; this, however, is not often found. Cystcarcinomas are far more frequently encountered, where the cancer cells are found in widely scattered places of the tumor. It is clear that in these cases the cancer developed primarily.

*Implantations.*—The ovaries being intraperitoneal organs, when they become invaded by papillary new-growths, the peritoneum may become involved by implantation. Small papillary particles of tumor are detached, find lodgement on and become nourished by the peritoneum. Cells may become detached spontaneously or may break away through traumatism and are implanted on the peritoneal surface. In this newly situated location the cells proliferate, developing into new tumor masses, similar to the mother tumor. The peritoneum of the pelvis is first invaded, but by the peristaltic action of the intestines, cell particles may be carried to any part of the peritoneal cavity and become implanted, not excluding even the diaphragm. Cell particles of the tumor may also be sucked through the stomata of the diaphragm and become implanted on its pleural surface. By a process of active proliferation, tumor cells may grow into lymph spaces or stomata from which lymph vessels take their origin. By the lymph current the cells are carried to the nearest lymph node in which a tumor may develop or the tumor cells may be swept into the general circulation and thus metastases may occur in any part of the body. Metastases in this manner of tumor cells of the ovary is, however, extremely rare.

*Relation Between Papilloma and Carcinoma.*—On account of this tendency to implantation of papillary tumors of the ovary, the suspicion has arisen that perhaps in some way they are related to the malignant neoplasms. There is, however, a great difference between the implantation of a papillary cell and that of a cell endowed with malignant tendencies. The cell of a papillary cystadenoma may proliferate on the newly implanted situation to an enormous degree, but will not cause destruction of neighboring cells. This is the great difference between a cancer cell and a papillary cell. It is immaterial how the cell from the mother tumor reaches its new situation, whether by peristaltic action of the intestines, by contact alone, by the lymph or blood stream. When the cell finds sufficient nutrition in its new place and does not perish, it will proliferate and develop into a tumor mass, but it will not de-

stroy neighboring cells. It may also happen that after a certain stage of development, further growth of the metastatic mass ceases or the growth may entirely disappear by absorption. Cancer cells do not behave in this manner. The destructive tendency of the cancer cell is the same in the metastases as in the parent cell.

Attention must, however, be called to the fact that not all papillary implantations behave in the benign manner alluded to above. In a large number of cases they react in a very harmful fashion toward the organism and in a certain number of instances they are the direct cause of death. In some cases the implantations become so extensive and are so situated that they cannot be removed. Complications may arise, and the exhaustion of the patient finally terminates in death. Cases have been recorded where the papillary tumor of the ovary was of the benign type and the implantation proved to be a malignant degeneration or the process was malignant from the beginning. It has not been proven thus far whether these secondary malignant degenerations of implantations are frequent or infrequent.

*Ascites.*—Ascites is a frequent complication of ovarian tumors, and is often encountered with the papillary cysts. It has been computed that ascites occurs in about 27 per cent. of cases. If the neoplasm throws off irritant products into the peritoneal cavity, the peritoneum will react toward it by transudation and an ascites will develop. If a cyst ruptures and its contents escape into the peritoneal cavity, the fluid may be absorbed without awakening a peritoneal reaction. In other cases, however, the escape of cyst contents causes a peritoneal reaction with a resultant ascites. In some cases the quantity of the ascitic fluid is very small, in others it is considerable. If the escape of the cyst contents extends over a long period of time, the resultant peritoneal reaction will be in proportion. The ascites is most marked in those cases where peritoneal implantation has taken place, for here the peritoneal irritation is necessarily greater and the cell secretion of the implanted mass is an added factor in the formation of the ascites. In other cases the ascites is due not alone to a transudation but to a peritoneal exudation. Here there is likewise an inflammatory reaction of the peritoneum, brought about by a complication of infection of the neoplasm itself, such as by tuberculosis. Sometimes there is not only an ascites present but also a pleural effusion. In these cases the quantity of the fluid in the peritoneum is so great that the pleural cavity becomes filled by suction through the stomata, although not all of the elements of the fluid in the abdomen are found in the pleura.

The clinical significance of ascites and pleural effusions cannot be stated in clear terms, they are very variable. But it can be stated that the presence of even a considerable degree of ascites does not necessarily mean a malignant disease of the ovary. With the removal of the tumor the ascites also disappears even though the implantations on the peritoneum is considerable. With the malignant tumors of the ovary, ascites occurs in about 64 per cent. of cases, in the benign cases in about 18 per cent., while in the fibromas of the ovary ascites occurs in 72 per cent. of the cases.

*Contents of Cysts.*—Papillary cystcarcinomas of the ovary, that is to say papillary cystadenomas, where a carcinomatous process is also present, are histologically the same as the cystadenomas, but do not attain the same size. As a rule they are much smaller, although they may become the size of a man's head. The contents are a serous fluid, quite clear but more often clouded by the presence of a large number of pus cells. If a hemorrhage has occurred, the contents may be mixed with blood, giving the fluid a brownish color. In the walls of the cyst, as well as in the septum of the various compartments of the tumor, there occur solid knots and solid plate-like masses, of various sizes and shapes, similar in appearance to the medullary carcinomas anywhere else in the body. In about 50 per cent. of the cases where papillary cell proliferations are also found in a cystadenoma of the ovary, carcinomatous process will also be encountered. In appearance the papillary formation in the cystcarcinomas is the same as in the papillary cystadenomas. When, however, the tumor mass is cut across, even with the naked eye the carcinomatous character of the tumor will become apparent. The cut surface of the growth yields a milky fluid and the knotty character of the tumor becomes visible. These solid knots occasionally are so large as to form half of the tumor. Part of the tumor may be a cystadenoma while the other part a true adenocarcinoma. If one finds a small area of a carcinomatous process in an apparently old cystoma, one can consider the case as a secondary carcinomatous degeneration of a cystadenoma. If, however, the cystoma is of recent development with many cancer areas, one must consider the process as a primary adenocarcinoma in conjunction with the adenocystoma with or without papillary proliferation. Both the adenoma and adenocarcinoma develop from the same type of epithelial cells, a gland-like epithelial cell in an undifferentiated state. When the change occurs in the cell, one cannot say whether it is to be an adenoma or a carcinoma. If the cell remains typical and does not change as to size and function, an adenoma will develop. If the



cell changes, becomes atypical as to size and appearance and function, then a carcinoma will develop. Both growths, the adenoma and the carcinoma, stand in the same relation as to their development and therefore it is not difficult to understand that both types of tumors may be found in the same neoplasm.

*Prognosis.*—As already cited, the ultimate outcome of a case of papillary cystadenoma is difficult to prognosticate. Experience has shown that the simple papillary cysts are benign, but it is almost impossible to know with certainty that the papillary cyst is a simple one. A very large number of these papillary cysts have a carcinomatous process going on in the same growth. What holds good for the tumor, is also true for the implantations. In one area the implantation may be of the simple papillary form, while in the other it is the carcinomatous form. In the papillary form, when the mother tumor is removed, the implantations as a rule disappear after the operation, or if the implantations do not disintegrate their development is so slow that the patient remains well for many many years. Not so with the carcinomatous implantations. Here the destructive tendency of the proliferating cells dominates the situation. The cells invade other organs causing more or less destruction in them. Hollow organs become invaded, the cancer breaks into them, bringing about serious complications.

In the case reported here, a very rare complication occurred. The cancerous proliferation broke into the vagina, by way of the cul-de-sac of Douglas. Large masses of cauliflower growths appeared in the vagina, interfering with the diagnosis of the case.

*History.*—When Mrs. J. J. came to my office to consult me about herself, she said that her chief complaint was a bloody vaginal discharge for the past six months. At first the bleeding only took place after a douche or intercourse. In the later dates, however, the bleeding had been continuous, never much, but a more or less constant staining. There was a dragging sensation in the pelvic region with occasional shooting pains in the lower part of the abdomen. The patient is thirty-five years old and has been married six years. She has had no children and no miscarriages. Her family history is negative as to cancer and tuberculosis.

She has been perfectly well in every way except that three years ago she had an attack of malarial fever. One year ago she had a mild attack of muscular rheumatism. She had been subject to a yellow vaginal discharge but it has never been excessive in amount.

Menstruation began at the age of fifteen, was regular every month, scant in amount and with no pain. The flow lasted from two to three days. Her last period was on Oct. 2, 1917, and it lasted three days.

Patient never suffered any abdominal pain, her general health has been very good, appetite poor, bowels constipated. She has no urinary disturbance, but says that she is conscious of an enlargement in the lower part of her abdomen. She does not know how long she has observed this enlargement, but it has been for some time. She has not lost in weight. Does not think that the loss of blood has affected her in any way. She seeks relief because she is annoyed by having to wear a napkin all the time. There has been no odor to the vaginal discharge. There has been no backache or headache. She is not nervous and as a rule she sleeps well all night. There has been no gastrointestinal disturbance except that she is constipated. The patient looks somewhat anemic, but the conjunctivæ are normal. Nothing abnormal about the heart and lungs. Abdominal palpation is negative as to the gall-bladder and appendix. Palpation in the left lower quadrant of the abdomen elicits a certain amount of tenderness and an indefinite mass which extends down to the symphyses pubes.

In making a vaginal examination the examining finger encounters a soft mass in the vagina which bleeds quite freely. Even gentle manipulations of the finger resulted in the breaking off of a piece of friable tissue. This piece of tissue was red in color and very soft. The entire vagina is filled with this soft, pultaceous mass, which bleeds freely. On account of the bleeding no further attempt was made to examine the patient and she was referred to the hospital at once. A tentative diagnosis of carcinoma of the cervix was made. When she entered the hospital several days later, further examination showed that the cervix of the uterus was not the seat of the neoplasm in the vagina. The cervix was normal, but immediately behind it the vaginal wall felt rough. With the patient in the knee-chest position, inspection showed that the growth in the vagina sprang from the vaginal wall at the region of the cul-de-sac of Douglas.

Bimanually a large mass is felt in the pelvis which seems to be connected with the uterus. The tumor in the pelvis extends toward the left of the uterus, in which the ovary is also involved. The right ovary appears to be enlarged. The entire pelvis is tender to touch. The case appeared to me to be malignant but it never dawned upon me to associate the tumor in the vagina with the neoplasm of the ovary. I have never met with a similar case before, nor have I ever read of one. The papillary cystadenoma of the left ovary, with carcinomatous process going on in the same tumor, became implanted on the vaginal wall in the cul-de-sac of Douglas, the neoplasm finally perforating the wall by the destructive tendency of the cancer cell. Proliferation of the cells of the neoplasm progressed, the vagina becoming filled with a large cauliflower excrescence. While the malignant nature of growth in the vagina was recognized it was not associated with the tumor in the pelvis, but the relation was recognized soon after the operation began.

*Operation.*—The patient, anesthetized, was placed in a lithotomy position. The perineum and vagina divulsed and a Percy water-

cooled speculum introduced. The cauliflower mass removed with forceps and attempt made to curet the base of the neoplasm, preliminary to cauterization with the Percy cautery. In doing this the curet slipped into the pelvis, and at once a large quantity of clear serous fluid escaped through the perforation thus made. It was very evident that I had punctured an ovarian cyst. The relation of the two growths, one in the vagina and one in the pelvis, was recognized and the true diagnosis of the pathologic condition established.

The vaginal vault was thoroughly cauterized with the cautery and the patient placed in position for laparotomy. The abdomen opened in the midline below the umbilicus. On opening the peritoneal cavity, a small amount of ascitic fluid escaped. The peritoneum was studded with papillomatous masses, particularly the pelvic portion. The pelvis appeared to be filled with the mass. The omentum was firmly adherent to the uterus and also to the bladder, and was the seat of a large amount of papillations. After separating the omentum, the sigmoid colon came into view. It was adherent to the structures beneath it and was also the seat of many papillary implantations. After separating the sigmoid from its bed of adhesions and packing it away with gauze, it was seen that the true pelvis was occupied by a papillary tumor of the left ovary and with numerous implantations of the peritoneum. Several handfuls of this papillary mass was scooped out and the pelvis partially cleared. The bladder wall as well as the rectum were the seat of numerous papillary masses. Both tubes were diseased and distended with pus. The wall of the papillary cyst was collapsed in the pelvis. The right ovary also had a papillary growth on its surface. The adhesions of the pus tubes to the peritoneum were very dense and separated with great difficulty. The uterine body itself was invaded by the growth. It was deemed best to do a total ablation.

The infundibulopelvic ligament and round ligament on the right side were clamped off and cut away. The bleeding points picked up with forceps and the vessels tied with catgut. The same procedure followed on the left side. The bladder peritoneum separated from the anterior surface of the uterus. The parametrial tissue and uterine arteries tied and cut away from the uterus on both sides. The bladder was then mobilized and the vagina cut away from the cervix throughout its entire circumference. The uterus and cervix, both tubes and both ovaries were thus removed in one mass. The vault of the vagina was sutured with catgut, all bleeding points tied and the abdomen closed without drainage.

There was considerable shock following the operation, but otherwise the patient recovered without an incident. The abdominal incision healed by primary union, the vault of the vagina healed by granulations, and the patient so far, has remained well. It is not to be expected, however, that there should be no recurrence in a case of this kind. It may not take place for a long time, however, as it is well known that the development of these tumors is very slow.

The pathological report of the case is as follows:



*Macroscopical.*—Uterus with both adnexa. Uterus measures  $9 \times 5 \times 4$  cm. Cervix shows a cauterized roughened area on the squamosa. The parametrium shows a number of friable pieces of tissue attached to the side of the uterus. The uterine mucosa is largely pale, extremely hyperplastic and grooved in many directions. One ovary contains a large corpus luteum with a gray center. A large number of pieces of yellowish broken-down tissue were received separately, also the ovary of the other side with a few small cysts containing masses of the above described type. The serous cyst contains numerous cholesterin crystals. Sections from both ovaries, tumor mass, uterine mucosa and cervix.

*Microscopical.*—Section of the tumor mass shows a mesh work of connective tissue, in the spaces of which are very numerous papillations of epithelial cells, supported by a minute amount of stroma. The papillæ are only two or three cells in breadth. The cells are large and loosely attached to the walls. There are numerous calcareous concretions. Psammomata. This tumor invades the edge of the section of the cervix, the parametrium, and appears in a small nodule in the second ovary.

*Diagnosis.*—Carcinoma ovarii papillari bilaterale. Metastatic in parametrial tissue. Psammoma.

501 WEST ONE HUNDRED AND TENTH STREET.

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## SOME PROBLEMS IN GYNECOLOGY.

BY

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In a hospital devoted to the treatment of diseases of women, as in any special hospital, one is apt to fall into routine lines, at least as far as the better known procedures are concerned. From time to time improvements in technic are suggested, tried, and, if found good, are adopted and finally become part of the well recognized routine. Perhaps a review of some of these conditions may prove valuable in suggesting something that may improve our knowledge or skill and thus the usefulness of the hospital itself. It seems hardly necessary to review the work that has been done in the past. Emmet, by his operations for the cure of lacerations of the cervix and of the perineum did a great deal to establish gynecology as a special department of medical science. Modern gynecology



now recognizes not only the fact that lacerations of the cervix should be repaired whenever the laceration is extensive enough to produce pathological changes in the cervical tissue, as recommended originally by Emmet, but also the fact that these changes are frequently precancerous in character and demand as routine treatment not the old Emmet operation of repair but the more radical operation of amputation. On my own service amputation of the cervix has been performed about ten times as often as the operation for simple repair. In the last two reports of the Woman's Hospital (1915 and 1916), a study of the operative statistics shows that amputation of the cervix has been done 337 times and repair only 203 times.

The indications for the operation of amputation include not only the so-called ulcerations of the cervix and their relation to the development of cancer, but a variety of other conditions, such as hypertrophy of the cervix associated with enlargement and displacement of the uterus. Amputation in such cases reduces the uterus in size and so aids other operative procedures for the correction of displacements. In a woman past the child-bearing period there is no objection to amputation, but in younger women still liable to become pregnant, the propriety of routine amputation is still very problematical. I have occasionally seen a confinement case where the obstruction to labor through a previous amputation of the cervix and the resulting scar tissue was sufficient to necessitate Cesarean section. I am always concerned when I undertake the delivery of a patient who gives a history of having had an amputation of the cervix.

For many years operation for the repair of the perineum (or for the restoration of the pelvic floor) was a procedure consisting in simple denudation and suture. This was modified by different operators in unessential details, but none of them gave what now should be regarded as really satisfactory results. Of all the various operations, that of Emmet was the most widely known and most frequently performed. In certain cases the results were ideal, but in many others the patient's condition was not improved in the slightest degree.

In the *Bulletin* of the Woman's Hospital published in October, 1913 (vol. i, No. 5), I described an operation, the steps of which were illustrated by photographs, which I called the muscle operation. The essential features were the mobilization of the edges of the levator ani muscles and the suturing together of these edges, besides suturing the fascial planes of the pelvis and lastly the vaginal mucous

membrane and skin. The operation is based on the same principles that underlie the closure of the abdominal wall in layers. At the present time the restoration of the pelvic floor is almost universally performed according to these principles if not entirely by this technic. It is only a very short time ago that this improvement in probably the most frequent of all gynecological operations was devised. Up to this comparatively recent time all sorts of operations for this condition were daily performed with results, in most cases, that were not good. The Woman's Hospital should receive more credit for this muscle operation than it has. Up to the time that the description was published no similar operation had been described, at least so far as I could ascertain at the time. (It was performed in essentially the same way for two or three years previous to October, 1913.)

Every hospital should be a teaching institution. Its power for good, its efficiency and its every activity would be improved by including regular teaching as part of its recognized work. There are very few hospitals devoted exclusively to gynecology and among them none stand higher by virtue of past achievements than the Woman's Hospital. I feel that if it were possible to increase the amount of teaching that is done an improvement in all departments would follow.

A great problem in gynecology to-day is the problem of properly training young men to become competent in this branch of medical and surgical science. I say medical, because of the need of diagnostic skill and conservatism in treatment, and surgical because of the close relationship between general surgery and gynecological surgery.

Many writers have emphasized the need of a more prolonged period of training as assistants in some surgical hospital before a man should venture to call himself a surgeon and practice as such. This has been especially true in the Mayo Clinic. A similar prolonged period of training is even more essential in gynecology. The problem of furnishing proper training in gynecological diagnosis, in medical and in local treatment, and in gynecological operations is a very real one. It can be solved best in a hospital devoted especially to gynecology. Beginning with diagnosis and medical treatment of ambulatory cases in the Out-Patient Department continued over a period of years, continuing with observations of operative cases that have been previously seen in the Clinic, thus learning exactness of diagnosis, and finally assisting at actual operations and studying in the laboratory the pathology of the various conditions calling for operation, will in the end develop a man really

skilled in his specialty. This routine is carried out at the present time to a greater or lesser extent by those attached to the visiting staff, but there is still the problem of the interne unsolved. The latter's too brief experience does not qualify him to practice as a gynecologist and his relations to the hospital could be changed to the benefit of himself and of the hospital. The most evident improvement is a longer service, the latter part of which should be under salary.

In stating the fact that the average general surgeon performs gynecological operations, especially plastic operations, abominably I am only repeating what has been said and written many times. One of the problems that will some day be solved is that of educating the general surgeon to become a better gynecologist. If that can be done he will at least learn to allow his women patients to have the benefit of operation at the hands of those whose specialty it is.

There are many special conditions in which greater knowledge and experience will teach us valuable lessons. While most gynecological conditions are at the present time adequately relieved by operation, there are some that are not. The operative relief of prolapse of the uterus and its complications may be mentioned as one example. In the majority of cases the results are fairly satisfactory, in many cases entirely so, but there are likewise many disappointments. Multiple operations must usually be performed. Success is due to a proper understanding of the combined causes and appropriate measures for their removal, varying the procedure with almost every case. This means long experience, good judgment and operative skill. It will be found that the uterus is almost invariably displaced so that its long axis coincides with the long axis of the vagina. If this is so, a prolapse inevitably takes place whether there has been any previous laceration or not. Any operation for its cure must take into account this fact and the axes of the uterus and the pelvic floor so changed in their relations that prolapse does not recur. The usual procedure will be an amputation of the cervix, at the same time in some cases shortening the uterosacral ligaments as recommended by Grad. This is followed by an extensive pelvic floor repair, and by a so-called cystocele operation. The latter, I believe, is often performed when unnecessary. After this the abdomen is opened and either the round ligaments shortened or the uterus brought forward by some other method. Personally, I prefer to decide at this time in regard to shortening the uterosacral ligaments, which is done too infrequently. In the majority of cases the results are excellent and permanent, but this is only so when done by a trained gynecologist.

There are some women in whom a really good result cannot be had by plastic work alone.

A discussion of gynecological problems would certainly be incomplete if nothing were said about the greatest problem of all, cancer. The subject is so vast and the literature so great, that it is impossible to do more than mention a very few facts. One of the most astonishing facts in my personal experience is that I now see so few cases of cancer of the uterus among the ward patients. This possibly may be merely accidental, but the fact remains that I rarely see an operative case of cancer of the cervix compared to the numbers that I saw a few years ago. I do see many more precancerous conditions of the cervix and also see many more cases of cancer of the ovary and cancerous involvement of the abdominal organs than I saw a few years ago. I cannot help feeling that the general public and the general practitioner have been educated so that such cases are recognized both earlier and oftener than formerly. They are sent to hospitals and promptly operated upon so that the proportion admitted to the Woman's Hospital, at least on my service, is distinctly less than it used to be.

Year by year we advance a little in our knowledge of cancer and its control. At the present time early recognition and early operation offers the best chance for the patient. The use of radium and of x-ray in conjunction with operation is under trial and promises to improve our results.

A discussion of the best methods of operating is out of place in an article of this kind as it would necessarily be too long. To summarize the more important points, I regard the problems that need solution somewhat as follows:

Some method must be devised to give us better diagnostic skill in gynecology, especially in what may be called medical gynecology and its allied conditions.

Also some method to give us better training in operative work. This can be obtained only by a longer course in special hospitals beginning with the interne service and continuing some system of acting as assistants to experienced operators for a period of years.

Lastly we may expect to improve our ultimate results in such cases as prolapse of the uterus for example, by continued study together with a well-developed system of "following up" our patients for long periods after they have been discharged from the actual service of the hospital.



## THE TOXEMIAS OF PREGNANCY.

BY

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THE subject is such a large one and involves so many irregular symptoms that one can only hope in a brief paper to present some of its manifestations and discuss broad principles of treatment.

There is much in the toxemias occurring in pregnancy that should hold the interest of nearly every branch of medicine. In fact, the internist, urologist, gastroenterologist, dermatologist, physiological chemist, and pathologist have worked and are consulted together with the obstetrician and gynecologist in the treatment of these cases.

But to the general practitioner especially, in whose practice the pregnant woman always figures, the toxemias of pregnancy should be of paramount importance.

Let me cite a few cases. A young woman from three to four months' pregnant begins to vomit, and vomits violently and frequently. In forty-eight hours she becomes very weak. The vomitus is dark, then blood stained. The skin becomes icteric. The temperature at first subnormal, begins to rise. In forty-eight hours she is dead. There has occurred a fulminating case of pernicious vomiting of pregnancy.

Another patient in the latter part of pregnancy has not been feeling well, has slept badly, and had more or less headache with diminished urine and some traces of albumin. With or without a history of some physical overexertion, she has a sudden severe pain referred to her uterus. Examination shows that the uterus is larger than normal for the period of gestation, that it is in tonic contraction and that the fetal heart has ceased to beat. Here is a case of placental separation and extensive hemorrhage due to toxemia.

A young woman near term whose urine had been carefully examined within two weeks and who was supposed to be in a normal condition, retired one evening after eating a hearty meal. About two hours later she woke up complaining of a feeling of oppression. Within half an hour I arrived and found her gasping her last breaths.

In a few moments she died. I opened the abdomen and delivered a fetus whose heart was beating, but I was unable to establish respirations. Examination of a catheterized specimen of urine showed much albumin. The patient had edema extending well up on the legs.

Another woman about seven months pregnant, supposedly well, became semidelirious, then stupid and comatose. Her condition was recognized as serious. She was brought to the hospital and there delivered. The following day she was still comatose and markedly icteric. For several days she passed enormous stools of dark blood. Gradually her symptoms cleared and recovery followed. Here was an extreme case of liver toxemia with hemorrhages.

To the above serious cases we all can add examples of toxemia with convulsions, some with previous warning symptoms and occasional rare cases without noticeable prodromata.

Toxemias of pregnancy generally speaking should include all cases of disturbed metabolism with toxic results associated with gravid condition.

Some of these cases are mild and often unrecognized. Many of their manifestations are diverse. We may include among these tachycardia, syncope, hyperemesis, ptyalism, headache, neuralgias, indigestion, mental depressions and excitation, nervousness, chorea, insanities, and dermatoses such as herpes gravidarum, erythema multiforme, and impetigo herpetiformis.

Our actual knowledge of the causation of toxemia is slight. The growing infant and its influence on maternal metabolism, is in most cases, the basic cause. Even the occasional incidence of post-partum eclampsia does not invalidate this theory. Such an affair would be ascribed to delayed poisoning.

It is true, that some toxic manifestations occur extremely early. An associate of mine has recently delivered a patient at three months for a condition that was patently eclampsia. Thaler and Zuckerman report twelve cases from the literature of eclampsia occurring before the third month.

Hyperemesis is commonly met with by the sixth week of gestation but the extremely toxic form not until a little later.

Toxemia has been reported in cases of hydatidiform mole but in the early development of this disease a fetus is present.

The disturbing element, a protein substance, probably originates in the placenta whence it reaches the woman's circulation. Her failure either to neutralize or eliminate it, starts the poisoning. The uterus itself is not the source of ordinary toxemia. In two

toxic albuminuric pregnancies, I have removed by abdominal section full-term healthy ectopic infants.

Recent studies concerning the origin of toxemia have been focussed along two lines. First there is much investigation concerning an anaphylactic source. A second fruitful line of study seems to be that of the effect of the interrelating glandular activities of the organism. Extensive work has and is being done on the effect of thyroid, suprarenal, ovarian and corpus lutein extracts on toxemia.

At this point it is possible to state more than theory. We know that the individual with defective kidneys, *i.e.*, with chronic nephritis, is a susceptible case, also that the woman with chronic liver disturbance is a probable risk. An improper balance of glandular action furnishes some extreme types of toxemia. Thyroid deficiency is such a cause. In this connection we must admit, however, that pregnancy sometimes stimulates a deficient thyroid gland. We know further that the digestive organs must be efficient. Multiple pregnancy is commonly toxic and is so because of the added strain of the metabolism of two fetuses.

Many a toxic condition begins with some burden on the eliminative organs, overeating, especially of protein diet, a chilling of the skin, the invasion of some infectious disease, too much contact with atmosphere deficient in oxygen, or constipation.

Often an acute explosion is immediately preceded by some one of the conditions just outlined. For example, in the gastric lavages which are given as a routine in all hospital eclampsia cases, we are frequently rewarded by the recovery of the remains of an amazingly substantial meal.

The pathology of lethal cases either from hyperemesis or eclampsia has been found to be very similar. Our most skilled pathologists would now, I believe, hesitate to distinguish between the type of toxemia causing death from the examination of liver sections.

The cases of pernicious vomiting may have a greater tendency to fatty degeneration of the liver and less tendency to hepatic hemorrhages. Those of eclampsia show the presence of fatty degeneration to a less extent and more hemorrhages with a greater liability to necrosis of cells. The kidneys show the change of the so-called kidney of pregnancy, up to that of acute parenchymatous nephritis. Or there may be lesions of a chronic nephritis to which the acute lesion has been added. The fatty degeneration of the heart goes with both type of cases, as does also the edema, hemorrhages and icterus of other parts of the body.

In general we may say that in hyperemesis gravidarum the liver lesions are most pronounced, but that, as pointed out by Dr. Cragin, in the eclampsia cases two types may usually be distinguished both by the symptomatology and the pathology. Namely, those in which the liver disturbance or the kidney disturbance is most marked.

In discussing toxic cases I propose to follow in the description of their symptoms and treatment four classifications. First, mild toxemia; second, hyperemesis gravidarum; third, preëclamptic cases and lastly eclampsia.

The mild cases are significant in as much as they may be premonitory to sudden severe toxemia. They are also the cause of not a little malaise. Some of them are quite responsive to treatment. The symptoms may show headache, drowsiness, fatigue, sleeplessness, or irritability. There is usually associated constipation, indigestion, flatulence and hyperacidity with diminished urine, sometimes showing a trace of albumin and often the presence of indican. Some of these patients are anemic. The blood pressure in the most marked cases ranges to the high limits of normal pressure, *i.e.*, to 130 or more.

Treatment consists in a hygienic method of living. Diet must be closely scrutinized especially as regards the protein intake. There must be plenty of bowel and skin activity and abundance of oxygen.

The fatigue toxins are particularly common in the earlier months and seem often to be associated with the milder hyperemesis cases.

The gastric condition seems to be hyperchlorhydria. Undoubtedly in some of these cases, beginning acidosis exists. Sodium bicarbonate by mouth and by bowel irrigations is efficient. There must be moderate and regular exercise, chiefly walking.

In those cases of vomiting which are obstinate there is much relief secured by a very limited diet. Small amounts of easily digested food are to be taken every two to three hours, with regular meals omitted. Many patients discover this fact for themselves. The extremes of nausea come on after a prolonged fast. Sometimes the evening meal which is a late dinner, following a light luncheon, is the time of greatest distress. The meal is approached with a great distaste for food and is either refused or rejected after eating. The underfeeding then exaggerates the nausea. A tolerance for the dinner may be acquired by taking afternoon tea.

The treatment of these cases may be summarized as follows: frequent light feedings with the avoidance of heavy meals; special



attention to the eliminatory organs; and, for the weakness, periods of recumbency.

Pernicious vomiting is peculiarly liable to occur in the early months but may occur at any time during pregnancy. In the last third of pregnancy a severe toxemia is much more apt to be eclampsia. The onset may be insidious and at first hard to distinguish from the severe form of the ordinary vomiting of pregnancy. But its persistency and severity, in spite of treatment, will establish the diagnosis. Other cases are of more sudden onset. The grave symptoms are so pronounced that interference to terminate gestation is urgent. Beside the vomiting there is epigastric pain, much prostration and first diminished urine frequently with albumin and a change in the ammonia coefficient. This last gives us a fair evidence of the existence of acidosis and also of the extent of derangement of liver function. Liver disturbance is clearly shown by icterus and gastrointestinal bleedings.

If the case is a slowly progressing one, the pulse becomes weaker. The temperature, at first subnormal, begins to rise. There may be signs of change in the size of the liver, either increase or decrease, and marked liver tenderness. Toward the end coma develops and death follows.

Pernicious vomiting, if not of the fulminating type, may improve under eliminative treatment even to recovery. Nature may terminate pregnancy from exhaustion. And with the death of the fetus symptoms usually disappear even before spontaneous abortion has occurred. The important thing is to recognize the time for interference. If the case is one with rapid onset of severe symptoms, delay is unjustifiable. In some of these cases even prompt emptying of the uterus does not avert the fatal ending.

There is also danger in treating too long the more chronic cases. When icterus is present and yet with scant occasional feedings the patient's condition seems to be maintained about the same, the chance of liver destruction is so great that delayed interference may be too late.

The vomiting is sometimes checked by large doses of bromides by rectum. If even fluids are rejected, all mouth feedings and water should be temporary withdrawn, while rectal feedings alternating with bowel irrigations of bicarbonate of soda solution should be tried.

Hypodermoclysis will also serve to diminish fluid loss and relieve thirst. While this treatment is being maintained the patient must not be allowed access to fluids. Recently one of my patients was

observed to be surreptitiously taking long draughts from the melted contents of an ice-bag.

So often does the severe case of vomiting show sudden recovery, that various remedies have been enthusiastically hailed as effective and often exploited only to give disappointing results. A patient about three months pregnant was in service at the Woman's Hospital recently. About two years previously I had curetted her for her extreme condition due to hyperemesis. After that she had conceived again and developed toxemia, but with remissions which enabled her to go home from the hospital, where she was being treated from time to time. At the sixth month she aborted. During this last pregnancy we tried the injection of corpus luteum extract. Within forty-eight hours the nausea subsided and the ability to retain food returned. Dismissed from the hospital the patient soon returned with her condition as bad as ever. This time there was no prompt response to the luteum therapy, but the condition ultimately improved. On the occasion of her third return to the hospital no luteum was given. Withdrawal of food and irrigations restored her digestive balance. Her next return at about the fifth month was for a spontaneous abortion.

To summarize the treatment of hyperemesis: we should combat the acidosis by promptly diminishing the food, even to the point of withdrawing temporarily all nourishment and even water by mouth, increase the elimination and insure physical and nervous rest. If the vomitus shows presence of blood or there is beginning jaundice with increasing rapidity of pulse, then the time for operative interference has arrived. In fact, exhaustion may indicate the need of this, before all of these symptoms appear.

In emptying the uterus, if the patient is in the first third of pregnancy, dilatation and curettage, at one sitting, is advisable. In the second third a preliminary tamponade of the cervix may be employed. In the last third of pregnancy perhaps an initial softening and opening of the cervix may be accomplished by the use of a cervical bag. In cases where speed is demanded vaginal hysterotomy is the best operative procedure. The indications are to minimize shock and loss of blood, and never in any case of toxemia use chloroform because of its tendency to liver destruction.

The recognition of the preëclamptic toxemia is of the greatest importance to the practitioner. This usually gives time for treatment. It is often possible to cure. Attention to the earliest symptoms may avert a great disaster. The lesser symptoms of toxemia above described become more pronounced. A heavy trace of albu-

min appears. It may become a definite percentage, with diminished total amount of urine and much diminished urea. Hyaline and granular casts are present. Blood pressure increases. More or less constant headaches are reported. If the kidney lesions are marked, edema of the legs appears, and this with puffiness about the eyelids are suspicious conditions. Spots before the eyes, flashes of light or diminished vision may be complained of. There may be irritability or nervousness or dulness and sleepiness. Gastro-enteric disturbances are often present and they vary from flatulence and lack of appetite, to marked nausea and vomiting.

The preëclamptic case will if untreated end in eclampsia. Occasionally instead of this termination the condition may pass into a delirium or coma without seizure and with a fatal ending. Some cases, though profoundly toxic, may pass through labor without quite achieving the explosion. There are others which terminate by what might be called Nature's cure, namely, the death of the child *in utero*. This last type of case is especially common where the toxic disturbance is complicated by a defective or previously permanently damaged kidney. That is, in the cases, which complicate chronic nephritis. The death of the child may be due to the toxemia. It is more often due to starvation from a succession of infarcts which destroy much of the placental tissue. In pronounced cases it is due to the separation of all or parts of the damaged placenta.

It has seemed in my experience that cases of chronic nephritis although showing much albumin and other marked evidences of kidney disturbance, including a very high blood pressure, are not as likely to reach the ultimate stage of actual convulsions as are the uncomplicated acute toxemias.

*Treatment.*—Prophylaxis requires that every obstetrical patient be seen at stated intervals and that she be given proper dietary and other hygienic instruction. She should be told of the importance of maintaining active kidney action and of regular bowel movements. Symptoms of toxemia such as headache or edema, she should be instructed to report. Upon her should be impressed the importance of sending urine specimens for examination at regular intervals. In cases that are at all suspicious the blood pressure should be taken. In the case of preëclamptic toxemia most active treatment should be instituted.

The patient must be in bed and allowed only a milk diet. As much water as possible should be taken by mouth. Hot packs or the hot-air bath may be employed, and colonic irrigations two or

three times daily. If the examination of the urine and the blood pressure readings show improvement the treatment may be continued. But if, in spite of such energetic treatment, as has been outlined, the symptoms do not improve but grow progressively worse, then ending of the pregnancy should be considered. I believe that this resort would be of especial value in those cases near term where the condition is associated with a chronic nephritis. For these cases are most prone to separation of the placenta and death of the fetus in utero.

Another argument that has been advanced for emptying the uterus in a persistent toxemia is the increased danger of permanent renal damage from prolonged irritation. Again, in cases unresponsive to treatment we are never sure how wide our margin is before the actual occurrence of eclampsia. It is, therefore, the part of good judgment to act promptly where favorable progress under medical treatment is not evident.

The actual occurrence of eclampsia is usually preceded by warning. In perhaps less than 10 per cent. of the cases the prodromata are slight, or at least, of short duration. It is certain that in an occasional case it is impossible for the physician to foresee the catastrophe. The urine usually shows some albumin before the seizure. After the attack it is very diminished, almost smoky in color and full of albumin and casts.

The time of occurrence is before labor in about three-fifths of the cases with the remaining two-fifths about equally divided between intrapartum and postpartum attacks. Severe eye symptoms, headache or neuralgic pains, with mental excitement, or hebetude are sometimes short precursors of an attack.

The convulsions being with a group of muscles sometimes orbital sometimes facial, sometimes of the thumb or fingers. All the muscles of the body quickly take part in the contractions which for about thirty seconds to one minute are largely tonic in character. Then follows for about two minutes the clonic contractions, which are followed by the stage of coma. In the first stage there is cyanosis from contraction of the muscles of respiration and this may increase in the second stage. Occasionally the patient may die in a convulsion from respiratory or cardiac failure. During the coma the breathing is stertorous. A danger of the second or violent convulsive stage is that the patient may injure herself. The tongue unless protected is severely bitten. I have seen the shoulder dislocated by an attack.

The convulsions, depending upon the amount of poisoning, recur



at fairly frequent intervals. Sometimes the patient never clears up at all from her coma before another seizure takes place. Others will become fairly rational and yet revert to convulsions. Where the condition persists, the danger of edema of the lungs is great. For each attack seems to weaken the heart action. In the fatal cases this is the usual cause of death. In the liver type of cases the coma, icterus and hemorrhages are more common.

There is no type of sickness where the indications for treatment are so clean cut as in eclampsia. I would summarize them as follows: First and most important by emptying the uterus with the minimum of shock, to get rid of the source of the poison. Secondly, to sustain the heart and respiration by diminishing the convulsions and relieving the blood pressure. Thirdly, remove the circulating poison in every possible way, that is by stimulating the organs of excretion.

As regards emptying the uterus promptly there are widely diverse opinions. Strogonoff with his policy of temporizing and medical treatment has adduced some excellent statistics and has acquired some followers. If without much shock the uterus can be rapidly emptied this should be done. In other words if there is a dilated or dilatable cervix proceed to deliver. Unfortunately many of these cases are before term and the majority of them are primiparæ with a cervix long and firm. If the fetus is small the vaginal hysterotomy gives us a splendid method of delivery.

The old accouchement forcè in this type of case was a prolonged and bloody procedure. I am convinced that many cases have died of hemorrhage or sepsis from rupture into the broad ligaments.

In the case near term the patient's condition may permit us to temporize by introducing a bag to secure cervical softening and dilatation. After a few hours the cervix may be found in a condition to permit easy operative delivery. In other cases the urgency of the symptoms may demand an abdominal Cesarean section.

The temporary control of the convulsions may be accomplished by a dose of morphine, until other measures can be taken. This is to gain time while preparations for delivery are being made or the patient being transferred to a hospital. If the pulse is rapid and strong, fluid extract of veratrum viridi, mm. 4 may be used hypodermically, and repeated in four hours. The effect of the drug must be carefully observed, as it is very depressant. Chloral hydrate grains 30 by rectum and then grains 10 every three hours seems to have a quieting effect. Nitroglycerine grain  $\frac{1}{100}$  every hour by hypodermic also has a beneficial effect on the blood pres-

sure. As far as possible all external stimuli such as sudden noise or light should be avoided.

It was formerly a rule to administer chloroform if the patient became restless or in case any manipulation, such as catheterization, was to be undertaken. I can recall such patients watched by a special nurse, who was instructed to give chloroform on the slightest indication. Undoubtedly such a measure was very harmful. During the seizure it was customary to give chloroform. It is now recognized that no anesthetic will stop the seizure once it has begun. The proper treatment in that emergency is to prevent injury to the tongue, keep the patient from falling off the bed or table and see that respiration is resumed. The early administration of oxygen is of some help in clearing up the cyanosis.

To remove the toxins the following methods are available. As soon as possible wash out the stomach and introduce by stomach tube 5 grains of calomel with  $\frac{1}{2}$  ounce of Epsom salts or 1 ounce of castor oil. Follow this up by colon irrigation with saline or bicarbonate of soda solution. By this method we clear out toxins from the intestines, increase peristalsis and permit the absorption of fluids, thus stimulating the kidneys. The irrigations may be used as often as three times a day. Bleeding followed by intravenous injection of saline may be employed in sthenic cases. But in putting solution in the blood we must remember the tendency to pulmonary edema and the amount must be limited.

A moderate bleeding at the time of delivery will usually serve the purpose of blood letting. After twenty-four hours the hot pack or hot-air bath is valuable. Used in earlier periods it has seemed to me to have a depressing effect upon the heart. The administration of oxygen at intervals is very beneficial both by aiding the heart action and assisting elimination. .

If coma persists, catheterization must be employed every six hours in order that the renal action may be under observation. It is further claimed that the empty bladder stimulates the kidneys.

There remains the duty of watching the heart action and supplying necessary stimulations. Beginning pulmonary edema demands active treatment and counterirritation by dry cupping over the chest.

As soon as the patient becomes partly rational she must be urged to drink water freely. Sometimes coma is prolonged and the tendency to convulsion persists. But these are cases it pays to fight for, and some very discouraging ones do manage to pull through.

With the improvement of the symptoms, the energetic treatment must be lessened but not entirely omitted until the patient is rational and the kidneys are acting freely. Even then the diet must be increased with exceeding caution depending upon the condition of the urine. If the baby is alive it is not wise to put it to the breast until several days after the mother's toxemia has disappeared.

Eclampsia if treated along the lines indicated above should give a mortality of not more than 10 per cent. It does seem at times that treated alike one series will be more fatal than at other times. This, however, applies to hospital cases where many have been previously neglected in their antepartum care. The present agitation to diminish infantile mortality by providing proper prenatal care for the poor will have its greatest benefit in recognizing early toxemia and in the prevention of its extreme types.

133 EAST FIFTY-SEVENTH STREET.

## ILEUS FOLLOWING GYNECOLOGICAL LAPAROTOMIES.

BY

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THE significance of inhibited peristalsis following laparotomy frequently is overlooked in postoperative treatment. Unless evident paresis or obstruction exists, postoperative meteorism is not, as a rule, a cause for alarm. Most surgeons agree that after every laparotomy there is always some paralysis of peristalsis; it is expected and, therefore, attracts little attention aside from administration, at times, of an opiate to relieve suffering. Bier emphatically states that postoperative ileus in some degree occurs during the first forty-eight hours after all laparotomies as a combined result of drying-out, cooling, mechanical or chemical irritation, or slight infection; and according to Krönig, it is never entirely absent. In regard to these conditions, there seems to be on the part of operators a tendency to assume the existence of an element of fatalism and they do not act until serious symptoms develop, as a result of which their patients suffer torture for from twenty-four to forty-eight hours. Finkelstein says that postoperative intestinal paralysees which follow major laparotomies are more frequent after gynecological operations, probably because of pelvic adhesions, the longer time required to operate, and the greater exposure to air.

The writer believes that intestinal distention coming on after operation should be regarded as a serious complication and treated as such from the beginning; that it should be classed with shock, hemorrhage, etc., as a condition demanding careful therapeutics. In his opinion, there is no doubt that many cases of severe ileus might have been prevented had the first signs of peristaltic interference been heeded and appropriate measures adopted to combat it.

"This ordinary immediate ileus," says Bier, "is, as a rule, harmless and passes away on the third day, but may persist and cause death." It is persistence that renders the condition dangerous. Although it usually is harmless, it is always the cause of much suffering and agony which must exert an unfavorable influence upon the nervous system of the patient and retard convalescence.

In a monograph upon his theory of anoci association, Crile says that postoperative distention can be explained as a biological adaptation to overcome infection; that in the course of evolution all abdominal penetrations are infective, but the peritoneum is able to overcome most infections if they can be localized. Nature, having no confidence in the surgeon, distends the coils of intestine against the abdominal walls, thereby shutting off any attempt of the infection to spread. This tenet, the writer believes, is unsubstantiated. In fact, farther on in the same article, Crile asserts that his nerve-blocking method does away with the abdominal distention and attendant pain and thus is a very great surgical improvement. He says: "The postoperative rise of temperature, the acceleration of the pulse, the pain, the nausea and distention are minimized or wholly prevented."

Postoperative ileus should be recognized as a disease entity, from the beginning, as G. Schubert points out. If the serious phenomena are to be recognized and guarded against, the milder phases cannot be overlooked or neglected.

Generally speaking, postoperative ileus is that which occurs within ten or fourteen days after operation. When it occurs later it is always due, as Elliott says, to obstruction and is so distinct in its manifestations and serious in its aspect that it readily is recognized. Early ileus frequently is so insidious in onset, so prone to combine one or more types that most writers in dealing with this condition draw the line rather sharply between it and the late form.

There are two main factors that enter into the etiology of ileus, which may be called the indirect and the direct causes. By indirect is meant the idiosyncrasies of the patient, her nervous make-up and her habits. It is a fact attested by de Francisco, Zadradincky,



Tansini, and others, that certain women seem to have an idiosyncrasy for the formation of adhesion and for ileus. Tansini describes a case in which he performed a nephropexy twice at different times and a paralytic ileus of an alarming degree appeared both times. Most operators have had the opportunity to observe the facility with which in some patients adhesions form after simple aseptic operations. The writer recalls a patient upon whom he operated four times for adhesions, each time in different parts of the abdomen, the primary operation being undertaken for the removal of an interval appendix. It is believed generally by medical men that the presence of a chronic lesion, such as tuberculosis, acting as a cause of faulty metabolism, predisposes to atypical peristalsis and renders the abdominal serosa susceptible to very slight trauma. Hysterical patients sometimes develop a spastic type of ileus which may cause grave concern to the surgeon. In these cases, however, there usually is no change in the pulse rate or cardiac activity, a dose or two of bromide relieving the condition.

Constipation, to which the majority of women seeking surgical treatment are subject, is a predisposing cause of ileus. The bowel torpidity may be due to the patient's failure to respond to the call of nature or to adhesive bands, kinks, membranes, and the like. A bowel, the musculature of which thus has become weakened and sluggish, very quickly responds to peristaltic inhibition.

The direct causes are such as arise from operative procedures. Nature resents any violation of the abdominal cavity. No matter how slight the unavoidable or avoidable trauma, the sensitive peritoneum reacts to the irritation when the abdomen is open. The usual postoperative reaction is caused by cooling and drying of exposed intestinal serosa by the air, by the more or less handling of the viscera, by the use of pads, sponges, etc., by slight infections from faulty technic, and by adherence of intestinal walls to abraded surfaces, ligature knots, or stumps. The rôle of narcosis in the production of ileus is a subject of much discussion, many writers giving this as one of the causes, others claiming that its effect has been greatly exaggerated. While clinical evidence seems to support the affirmative view, the manner in which narcosis acts in the causation of intestinal paralysis is not very clearly understood. In an exhaustive article on acute dilation of the stomach, G. A. Friedman claims that narcosis produces splanchnic paralysis by action upon the nucleus in the floor of the fourth ventricle. More advanced views, however, point to interference by narcosis with the interglandular action of the chromaffin system, especially that of

the adrenals, which seem to exert direct action upon the abdominal sympathetic nerves. As soon as the anesthetic is withdrawn interference ceases, which tends to prove that the more prolonged the narcosis the greater the adverse action of the controlling influences.

Hastie and Monat have pointed out that asphyxia causes intestinal anemia, lessening intestinal activity. With this view Nothnagel agrees and explains the phenomena by saying that the dyspneic blood increases the peristaltic action, thus tiring the intestinal musculature and favoring ileus. Crile says that ether immediately impairs the immunity of the patient by interfering with cellular oxidation.

The writer made a careful study of forty operative cases with the view to determine, if possible, what effect, if any, varying length of time of narcosis had on the presence of postoperative distention. The operations varied in time for from fifteen to ninety minutes, all possible care being taken to avoid intraabdominal trauma. The result of this study conclusively showed that the shorter the time of narcosis the less the distention, the comparative cases being carefully selected.

Whether the nerve shock, as described by Crile, has an inhibiting effect on peristalsis, is not universally acknowledged. In a series of twenty cases in which the anoci association method was used in conjunction with gas-oxygen and gas-oxygen-ether narcosis, little appreciable diminution in distention was noticed, but there was far less pain. Of course, this lack of result may have been due to faulty technic.

The usual or harmless form of ileus may be the forerunner of the more serious type. The latter may be ushered in very gradually, beginning immediately after operation. For this reason alone, it is wise to take precautions in the earliest stages, for the same reason that tonsillitis should be differentiated from diphtheria.

Severe ileus is not very uncommon. It occurs in about 1 per cent. of all laparotomies. Some writers give the percentage as high as 6 per cent. Thiemann reports 3 per cent. Klotz saw thirty-one cases in 569 gynecological operations. Döderlein and Krönig, in 2000 cases at the Tübingen Clinic, saw twenty-four cases. The writer, in 340 laparotomies, saw five. These percentages represent a very grave source of danger following laparotomies.

Severe ileus has been classified as dynamic or paralytic and mechanical, according as the cause is splanchnic paralysis or obstruction to emptying of the bowel. Vaccari claims that all cases

of ileus are due to either peritonitis or obstruction. He does not recognize the spastic type. The two types, as a rule, have distinct symptoms, but sometimes resemble each other so closely that differentiation is impossible. From the academic standpoint, the fine distinction of type is enlightening, but therapeutically it is apt to obscure the vital issue and lead to dangerous procrastination.

Paralytic or dynamic ileus results from sympathetic paralysis, induced by peritonitis, mechanical irritation of intestinal musculature or peritoneum, such as is caused by rough handling, traumatism, or chemicals, by improperly prepared or applied pads, by too much dry sponging and by eventration. Stumpf and Freund emphasize eventration as a cause of intestinal paresis. Circulatory engorgement caused by wounding a blood-vessel in the intestinal wall, and injury to the mesenteric vessels causing thrombosis, infarcts, etc., which may be caused by severe traction on the mesentery by rough handling, placing of pads and the long-continued Trendelenburg position are contributing causes. Kuskat, Craig, and Trendelenburg himself assert that the last mentioned may induce ileus.

Spastic ileus, which is dynamic in character, usually occurs in hysterical women and in cases of lead poisoning. It rarely occurs postoperatively. Some writers ignore this type completely in dealing with postoperative ileus. Döderlein states that spastic ileus is denied on good authority, but its occasional occurrence is still authenticated. It is known to occur in the predisposed and under certain irritations, such as gall-stones.

Sandos and Sterling, in their physiology, say: that all stimuli may even produce spasmodic contracture of the musculature of the intestine.

Baldy reports two cases after hysterectomy, the autopsies showing no peritonitis, but intestines contracted in one or two places. Experiments have shown that stimulation of the splanchnic plexuses of Auerbach and Meissner causes increased peristalsis, while overstimulation causes spasmodic contracture. Spastic ileus attacks, by preference, the colon, but may affect the ileum. Bunge, at the German Surgical Congress, 1908, reported two cases of spastic ileus. The first case occurred after an operation for appendicitis. Relaparotomy showed the entire colon in spastic contraction. An ileostomy was done and the patient recovered. In the second case, the contraction extended up the ileum for 30 or 40 centimeters. Spastic ileus is very hard to differentiate, but presents characteristic symptoms of intestinal paresis. The mechanical type of severe ileus is due to adhesions of gut to gut, of gut to the abraded surfaces,

such as a stump, a denuded area, such as is left after separating pus tubes, etc., ligature sites, or to a band of adhesions across the lumen. A loop of intestines caught in a rent of the omentum or mesentery, or between two constricting bands, if not released, is apt to produce the characteristic ileus.

Drainage devices may produce reflex disturbances of peristalsis, which promptly subside after removal of the drain. Other foreign bodies, such as gauze, tampons, etc., left in the cavity, may produce paralysis.

Arteriomesenteric ileus is one of the most dreaded postoperative complications. It has been called Riedel's syndrome or acute dilation of the stomach. As a rule, this is not described under postoperative ileus, it being a disease by itself. The etiology is obscure, although it is generally supposed that it is caused by closure of the duodenum by the constricting effect of the superior mesenteric artery and the mesentery between which the duodenum is caught. Some writers claim that the constricting of the duodenum is the result and not the cause of the dilation. While this accident is very serious, it lends itself usually to speedy relief, if recognition and treatment are early.

The etiological factors of severe ileus may be epitomized as follows:

1. Mechanical irritation of the peritoneum and intestine during operation.
2. Infections of the peritoneum.
3. Adhesions of intestinal loop to abraded surfaces or to adhesion strands.
4. Closure of mesenteric vessels.

The diagnosis of ileus is made by the presence of abdominal distention, local or general, by the failure of the bowel to expel gas or feces, and by vomiting. Pain, while always present in the first stages of intestinal occlusion, may be entirely absent in the severest forms, especially in the paralytic forms. In fact, if pain, usually present immediately after operation, disappears and the distention persists, it is good evidence of more or less severe paralysis. Even if the bowels have expelled gas or feces, or both, and distention persists, there is danger of grave sequelæ.

Every postoperative distention should be viewed with suspicion. Its course should be watched, hour by hour. It is only by so doing that the severity of the condition can be determined. In general, it may be said that the paralytic form, which includes the irritative, spastic, and septic types, appears in the first three days after operation and the mechanical form, after gas and feces have escaped.



Sometimes, however, both forms appear together, which makes differential diagnosis difficult.

The paralytic form is manifested by gradual increase in the meteorism and failure of the bowels to expel gas or feces. Vomiting soon supervenes and increases in frequency; there is an increase in the pulse rate, which soon loses its normal character and becomes weaker and thready, depending on the degree of toxemia. Döderlein and Krönig say that there may not be any rise in temperature, as the toxins may not affect the heat center. On the other hand, they do affect the vasomotor center, which they paralyze and cause the rapid thready pulse. As a rule, ileus is accompanied with some rise of temperature.

The typical symptom-complex would be as follows: After shock has disappeared and the patient feels better, with a fair pulse, the temperature and also the pulse rate rise, and the patient begins again to feel ill; the abdomen is tympanitic, the stomach feels distended, and gas does not pass from the bowel. Vomiting soon begins, and consists, at first, of stomach contents, then bile-tinged fluids, and, if the condition is not relieved, fecal-stained material. The condition becomes worse, especially as regards cardiac activity, due not only to toxemia but to pressing upward of the diaphragm by the distended bowels.

Obstructive ileus may occur as early as the third day, though, as a rule, it does not develop until the sixth to the tenth day. In the early stages, there is exaggerated peristalsis—which frequently can be seen if the abdominal wall is thin—resulting from an attempt of nature to force by the obstruction. Auscultation and also the increased borborygmi reveal this. A tumor at the site of the obstruction may be felt and there is generally tenderness over the wound. This last is particularly true of colonic obstruction, although the reverse is true with an obturation of the ileum. The clinical picture of cecal obstruction is identical with that low down in the ileum. Colonic obstruction sets in slowly and does not always cause vomiting at first. Meteorism may not develop for five or six days. Usually there is little circulatory or febrile reaction. On the other hand, obstruction of the small intestine in the upper ileum or jejunum shows early a decided effect on the pulse rate, with or without much fever, and vomiting is an early feature. There is not so much meteorism, as there is not so much intestine involved.

In obstruction of the lower ileum, the symptoms vary as the obstruction approaches the colon or jejunum.

The writer believes that a severe ileus should always be suspected

if, after recovery from the effects of the anesthetic, vomiting continues or again begins, accompanied by abdominal distention. There may be no change in the pulse rate, as that may have been increased by the effects of the operation or the general lowered vitality. Many writers emphasize the importance of differentiating the paralytic from the obstructive form, and it is not rare to see a case of undetermined character develop beyond the point where life may be saved.

The pathological conception of ileus, according to text-books and many writers, follows the natural road of clinical findings without the benefit of laboratory research or animal experimentation. In a great measure, autopsy findings have corroborated the clinical evidence. It is with this conception that many authors strongly assert the importance of making the differential diagnosis of the two forms, some writers declaring that surgical interference in paralytic ileus is unwarranted.

The classical pathological picture of obstructive ileus starts with occlusion of the lumen of the viscus, which is followed by increased peristalsis. Meanwhile, the contents of the bowel accumulate and, being prevented from escaping, increasingly distend the lumen until the obstruction is relieved or death ensues. This distention produces a thinning of the bowel wall with emigration of bacteria into the peritoneal cavity, causing a peritonitis from which toxins are absorbed. Sometimes ulcers form in the mucosa and break through into the abdominal cavity. In the distended loops, fecal material decomposes and toxic material is elaborated which, being absorbed, causes dangerous toxemia.

In the paralytic form, the putrefying feces or the presence of a septic peritonitis is believed to be the cause of death.

Krönig says that after fecal stasis, fermentative products of a toxic character are formed and absorbed, and that after prolonged operations or in weakened organisms these toxins are sufficient to cause death. All through the literature, absorption from septic peritonitis and fecal decomposition are advanced as the chief cause of death. G. Schubert says that it is doubtful if paralytic ileus itself ever causes death, that the death is due to complicating sepsis.

While agreeing with the pathological conditions described above, the writer believes that the most potent factor in the production of toxemia is not the septic process or the emanation from putrefying feces, but an autogenous toxemia resulting from toxins far more poisonous than the bacterial or fermentative toxins, elaborated from the blood by the cells of the mucosa of the upper segments of the

small intestine. In every serious or fatal case, the upper bowel is always involved, and it is here, experiments have shown, that a very toxic material is elaborated if distal drainage is occluded. This toxin secretion is made possible by dehydration from vomiting and, perhaps, the lack of internal secretion control.

Whipple, Stone, and Bernheim (*Jour. Exp. Med.*, xix, 144, 1914) in an article on intestinal obstruction, speaking of the defensive mechanism against duodenal loop poisoning, say: "Intoxication is evident in a drained duodenal loop, whether it opens externally or into the jejunum and may be associated with more or less immunity which can be demonstrated after a period of days. Intoxication with a closed loop is identical whether the loop is left empty at operation or filled with a lethal dose of loop fluid. This emphasizes the fact that absorption of the poison is essentially from the mucous membrane rather than from the contents of the closed loop. Cessation of the normal flow of intestinal fluids which bathe the mucous membrane may be essentially responsible for the perverted activity of the mucosa and the secretion of a poisonous material."

Hartwell, Hogue, and Beekman (*Arch. of Int. Med.*, xiii, 701, 1914) say that if the upper segment (of the bowel) has become damaged, poisonous absorption is threatened, and a drainage enterostomy should at once be performed, in advance of the relief of the ileus.

Clairmont and Rainizi, quoted by Finney, injected filtrates from normal unobstructed intestines into guinea-pigs, and perceived no toxic results. They then injected pathological fluids from obstructed intestines and found they were profoundly toxic and lethal. The fluids from the colon were not as poisonous as those from the small intestine. Hartwell, in some experiments on dogs with bowels artificially obstructed, found that by subcutaneous injection of saline these dogs were kept alive and well for twenty-four days. When they were killed, autopsy showed no pathological lesion except dilation above the ligature. Draper (Maury) found, experimentally, that by feeding normal mucosa cells from the intestines of a well dog to dogs with obstructed bowels he was able to keep them alive and well.

Moraselis, Ruis, and Natale, quoted by Draper, showed conclusively by injection into rabbits that intestinal contents from an obstructed segment of intestine become less toxic directly the obstruction neared the rectum. Duodenal contents were most toxic, and the sigmoid contents least so. This is attributed to the symbiotic action of the bacteria in the lower bowel.

Cases of fecal vomiting frequently are seen which, as soon as the



obstruction is removed and drainage established, promptly recover (F. Wood). This is well illustrated by the following case:

Mrs. P., aged forty-eight, was operated on by the writer at the Woman's Hospital, October 3, 1914, for pelvic adhesions and partially obstructed sigmoid, as shown by the röntgenograph. She made a good recovery from the anesthetic, her temperature at 8.00 P. M., being  $99.3^{\circ}$ , pulse 82, respiration 22. During the night she was somewhat restless. There was only slight abdominal distention. Morphine, grain  $\frac{1}{4}$  by hypo. was given and she slept well until 2.30 A. M., when she awoke and complained of pain in the abdomen. The rest of the night she slept at short intervals but was more or less restless. On the morning of the 4th, she felt fairly well, but complained of nausea. She was given water by the mouth, which did not increase the nausea nor cause vomiting. Her temperature at 8.00 P. M. was  $100^{\circ}$ , pulse 92, respiration 22. On the 5th, the temperature dropped to normal, pulse 88, respiration 22. There was quite marked meteorism, accompanied with more or less discomfort. The urine was negative. At one o'clock of the 6th, the pain was worse, a little watery fluid was vomited, after which some relief was felt. An enema given was expelled without gas. The rectal tube was inserted for twenty minutes, with relief. At 6.00 A. M., enemata of oil and turpentine followed by soapsuds were given, which she expelled immediately. At 8.30, vomiting began and continued about every half hour. Hot water was given by mouth and retained. The abdominal distention was apparently increasing. The emesis continued; a large, hot flaxseed poultice was placed over the abdomen. The pulse at 8.00 A. M. was 120; at 12.00, it was 130. The temperature showed only a slight rise to  $101^{\circ}$ . Vomiting of greenish fluid continued about every fifteen minutes. An enema of milk and molasses, of each a half pint, was given without relief. The rectal tube brought away no gas. At midnight, the pulse was 145, temperature  $101^{\circ}$ , respiration 28. A diagnosis of ileus was made and the patient was taken to the operating room and given a quarter of a grain of morphine and a hundredth of hyoscin. The abdomen was opened through the operative wound and a diffuse peritonitis was found extending all through the pelvis and the lower part of the abdomen. The patient's condition was not good, so a loop of upper ileum or jejunum was brought up and sutured into the wound, then opened and a No. 30 rubber tube inserted into the proximal segment. Two gauze drains were inserted down into the pelvis. The time of operation was fifteen minutes. At 8.00 A. M., the morning of the 7th, the patient's temperature was  $98.3^{\circ}$ , pulse 130, respiration 24. Vomiting and pain had ceased. At 8.00 P. M., same day, the temperature was  $98.2^{\circ}$ , pulse 100, respiration 24. Recovery was uninterrupted, the enterostomy wound being closed later.

While the enterostomy wound was open the patient rapidly lost flesh and strength through starvation, though rectal and tube feeding, carried out carefully at two-hour intervals and in small



quantities, arrested this somewhat. After the fistula was closed the lost strength and flesh were rapidly regained.

W. W. Grant (*Surg., Gyn. & Obst.*, April, 1915) describes two cases in which the same procedure was followed, namely, enterostomy, with immediate relief but a fatal outcome. He operated on the third and fifth day after obstruction, before which time lethal doses of toxin may have been absorbed from the upper intestine.

Gurb, of Montreal, believes that since the mucosa of the upper bowel contains a greater content of toxic principle than do the contents of the lumen, it would seem that the poison is produced by autolysis rather than by bacteria. Roger believes in the autogenous origin of obstructive toxemias, and says: "Emancipation from the text-book dogmas of nervous influences, shock, stagnation of bowel contents, passage of bacteria and bacterial products through the stretched wall as the cause of toxemia" is very necessary. He says these should be set aside in favor of modern conceptions of glandular interaction, interference with which probably is the fundamental cause of obstructive death.

Draper (Maury), in another article, says that dogs will live for weeks with iliac obstruction, but die in a few hours with duodenal obstruction, and the same dog will live for weeks if there is the slightest drainage of the duodenum. In ileocolic obstruction, the danger lies in the sequence of peritonitis, which produces not only its own toxins but, by paralyzing the whole gut, induces the vicious secretion of the upper coils.

Granting that any postoperative distention is pathological and as such should be considered worthy of every attention, the prophylaxis assumes great importance. The preoperative preparation should consist of careful regulation of the bowels, without purges, etc., some days before operation. Purging, or even milder catharsis, just before operation is to be condemned. An enema or two the night before is sufficient. Some operators advise against even an enema twenty-four hours before operation. The writer's method of giving a laxative two or three days before operation and an enema the night before has acted very satisfactorily. In emergency cases, no enemata are given. The nervous or hysterical patient should, as far as possible, be guarded against the worry of distressing anticipation by the judicious use of bromides for a few days. A little morphine or morphine and hyoscine, given just before she is taken to the operating room, not only frees her from the horror of the last few moments before operation, but minimizes the amount of anesthetic needed. Crile lays great stress on the effect of emo-

tional stimuli on the brain. The less anesthetic employed, the less the liability to narcosis depression. There is no doubt that the shorter the time of operation, the fewer bad effects will follow. This applies not only to the narcosis and the natural surgical shock, but to the length of time the abdominal contents are exposed to the air. Many writers emphasize the necessity of avoidance, as far as possible, of contact by the intestines and peritoneum with the air and chemical substances. Overlarge incisions always invite splanchnic irritation. The smaller the incision, the less the exposure. Many operators scoff at the small incision, but the writer believes that operative technic will never approach the ideal until the smallest possible incision through which the work readily and safely can be done, is universally adopted. The whole abdominal cavity can be explored through a three- or four-inch incision. The writer saw one of the most noted and publicly acclaimed surgeons make an incision for the removal of the uterus and two ovarian cysts, the larger of which was about the size of a grapefruit, which extended from  $\frac{1}{2}$  inch below the ensiform cartilage to the pubes. When asked why such a large incision was made, he replied he wanted plenty of room. The patient died of shock. The same surgeon, operating in the upper abdomen, where he was most adept, never made an incision over 3 or 4 inches long.

Except for cauterizing, chemicals are never used in contact with the peritoneum, but the prevalent use of iodine in the preparation of the abdomen has brought the danger of intestinal irritation when the gut comes in contact with the skin. Rehn, quoted by Bier, first drew attention to the irritative effect of iodine on serous surfaces. It is, therefore, important to cover the skin by pads or towels held in place by clamps or pins.

Rough handling of the bowel is to be avoided at all times. There is no condition which demands maltreatment of the intestines. This applies especially to the preparation and use of abdominal pads. Dry pads should never be used; thin pads are bad because the water evaporates quickly and they are liable to chill the gut. Thick, warm pads, moistened in saline, are best. Pads roughly shoved in through the incision to keep back the intestines, not only irritate the sensitive serosa, but may produce injury to the mesentery, resulting in venous or arterial occlusion.

One of the most difficult problems before the surgeon to-day is to prevent adhesions. Thiemann says: "We know of one resource only for preventing adhesions, to wit, keeping up the peristalsis from the earliest moment." He also says that if the various substances which

have been applied to the peritoneum, prevent adhesions, it is very likely because they stimulate peristalsis. He goes so far as to advocate opening the abdomen after all postoperative inflammatory disturbances have subsided and dividing all bands.

The covering of all raw surfaces, stumps, ligature-knots, and suture lines, were it possible, would go far to prevent the formation of adhesions. But this is not always possible, so the problem really resolves itself into the necessity of keeping up peristalsis from the very first.

The use of olive or cotton-seed oil, liquid vaseline, animal oils, and the like, have proved rather unsatisfactory in seventy-five of the writer's cases. Some operators use a Cargile membrane with good results, but it is very hard to apply and many surfaces do not lend themselves to complete covering. Transplanting of omentum to cover raw places, as recommended by A. T. Mann, of Minneapolis, and others, has proved of value in some hands.

The stimulation of peristalsis immediately after operation has received a great deal of attention for a number of years. Of the drugs most highly acclaimed, atropine and physostigmine lead. Vogel, Bier, Zadravnický, and others, praise physostigmine above all drugs. While there is no doubt that this drug and atropine do act well in some cases, their action is uncertain and bad after-effects have been reported.

Simoncelli and others have used the preparation called "Peristaltic Hormonal," introduced by Zuelzer, with marked effect. This preparation, however, has a pronounced effect in lowering the blood pressure and must be used with great care. Deaths after its use have been reported.

The direct injection of castor oil and Epsom salts into the bowel has few advocates now.

The writer has been using a water-soluble glucoside from cascara sagrada, recommended by K. Finkelstein (*Deutsch. Med. Wochenschr.*, December 17, 1914) in twelve cases. These cases included three pus tubes with exudates, four supravaginal hysterectomies, one case of adeno-carcinoma of the uterine body, two cases of retroflexion of the uterus, and two of appendicitis. With the exception of one case, all had more or less adhesions. The result of the treatment has been very startling. None of the cases had marked distention. Two of the pus tube cases had some distention, but passed gas naturally at the end of twenty-four hours. The drug was administered hypodermatically before the patient left the operating table, the dose being 1 ampule of 0.5 gm. This dose was repeated



every six hours, until gas was passed. Of course, twelve cases are insufficient from which to draw any definite conclusions, but the decided results obtained warrant continued trial.

The treatment of ileus after it has once set in consists of, first, an attempt to excite peristalsis strong enough to produce an evacuation by medical means; and then, if failure ensues, to relaparotomize for drainage and, if possible, the relief of the obstruction.

The writer believes that measures to relieve distention should be instituted at the end of twenty-four hours if gas has not passed the anus. The usual custom of allowing a distended abdomen to persist for two to four days is very hazardous. If there is no meteorism, it does no harm to wait two or three days before moving the bowels. Cathartics and the like are not demanded, but enemata consisting of glycerine, soapsuds preceded by oil, and turpentine, should be tried first. Other mixtures, such as milk and molasses, equal parts, have been used successfully. Oxygen gas, introduced per rectum, has, in the writer's hands, proved very valuable, acting by stimulation of the nerve endings and also by the mechanical effect of straightening agglutinated coils. The abdominal application of hot poultices and Gelinsky's hot-air baths, have proved of great aid, especially if peritonitis be present. The writer has used the cluster of electric light bulbs with very satisfactory results in certain cases. Pettenkofer uses galvanic electrical enemata, as recommended by French authors. As slowed peristalsis is favored by the recumbent position, it is important to insist on the frequent change in position of the patient, by turning her from side to side, or tipping the bed. The knee-chest position has been used to relieve a kink or a twist in the intestines. These body movements also tend to prevent adhesions. Gentle massage to the abdomen has been recommended, but is of doubtful value on account of the discomfort to the patient.

If, in spite of all efforts, the ileus is not relieved, relaparotomy must be considered, some authors say as early as two days, others say, by the fifth day. Relaparotomy is a very grave procedure and becomes graver the longer the ileus has persisted. It is a question whether the seriousness of the reoperation is not brought about by the tendency of the surgeon to wait too long.

The writer believes that if during the first forty-eight hours the patient's bowels become distended, causing pain, no gas passes the anus and vomiting is present, with an increasing pulse rate, the diagnosis of ileus should be made at once and an attempt made to open the bowels. If ineffectual after twelve to twenty-four hours, relaparotomy should be done. Increasing vomiting and pulse rate



are signals that should be obeyed at once. If the ileus is relieved, before the so-called fecal vomiting is noticed, the chances of recovery are very excellent. After fecal vomiting has begun, toxic absorption also is going on, and the prognosis grows graver as the time slips by.

After the abdomen has been opened, the type of ileus reveals itself. If it is septic, an ileostomy or low jejunostomy should be done at the same time the septic condition is treated. The sooner out of such an abdomen, the better the chances of the patient. Simple puncture of the bowel does no good, for the gas is not the offending agent. Spastic ileus is always treated by ileostomy. If the ileus is obstructive and the patient's condition permits the time, a search for the obstruction should be made and the obturation relieved. As a rule, these cases are in a pretty low state of vitality, not only from the effects of the ileus, but from the primary operation and it is a grave question whether it is good surgery to expose the patient to the shock of handling the intestines in searching for the lesion, or of a resection, however cleverly done. Far better is it to drain off the toxic products and wait until later for the radical work.

In the light of the autogenetic hypothesis, the efficacy of an early ileostomy must be recognized. It is an axiom of surgery that the earlier a lesion is attacked the more favorable the prognosis. Ileus is the germinal bud which, if allowed to grow and blossom bears a very deadly fruit. It is the bud of the early manifestation of intestinal paresis that must be attacked, not necessarily by operation, to ensure the patient's safety. If operation is the only resource, it should be aimed at the root and done in the quickest possible time.

In conclusion, the writer would summarize as follows:

1. That the postoperative distention which is nearly always present is likely to be a signal of danger and not a condition to be ignored.
2. That differential diagnosis is not sufficiently important to demand even one hour of delay in therapeutics.
3. That the greatest source of danger in ileus is the vicious secretion of the upper small intestine caused by the failure of glandular interaction and dehydration by vomiting.
4. That a strict prophylaxis includes preoperative care as well as most careful attention to perfect technic at operation.
5. That early treatment at the end of twenty-four hours is indicated and early operation if nonoperative measures fail.
6. That the upper bowel should always be drained and not merely punctured, the radical cure being postponed unless the patient's condition allows an extended operation.

40 EAST FORTY-FIRST STREET.

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STATISTICAL STUDY OF ONE HUNDRED CASES OF  
PYOSALPINX.

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ONE hundred cases of pyosalpingitis which were operated on by the various members of the Surgical Staff and taken from the records of the Woman's Hospital, form the basis of this communication. They include all classes of cases of pyosalpingitis from the mild cases to those suffering with profound septic intoxication. The types of operations performed on these cases differ greatly. In some cases the operation consisted of drainage of the septic focus alone, while in others, total ablation of all the pelvic organs was done.

Clinically pyosalpingitis may be divided into three great classes.

- I. Acute purulent salpingitis.
- II. Subacute purulent salpingitis.
- III. Acute recurrent purulent salpingitis.

In the study of these 100 cases no attempt is made to group them according to this classification, but from a clinical point the above classification is not only of interest, but of practical value. In a study of these 100 cases only the surgical aspect of the cases will be considered. No attempt will be made to take into consideration the remote recovery of the patient. The condition of the patient at the time of her leaving the hospital only will be considered.

The above classification of pyosalpingitis cases is of clinical value because they can thus be easily distinguished at the bedside of the patient. In the acute cases we have the history of infection of the genital tract of recent date, we have the history of an acute onset with abdominal pain which is at times very severe, and great tenderness, a rise of temperature and pulse, the chills, the sweats, the prostration—all of which point to the acuteness of the inflammatory reaction. In these acute cases the subjective symptoms are overwhelming, while the objective are very few and sometimes *nil*. In some cases the infective agent can be demonstrated while in others it cannot. The lower abdomen is tender on palpation and bimanually very little can be felt. Palpation gives the woman

lots of pain and gives the diagnostician very little information. It is, however, not difficult to diagnosticate these cases of acute pyosalpingitis from the symptoms enumerated above.

In subacute pyosalpingitis we have a series of symptoms and signs which lead to a ready diagnosis. This class starts off with milder symptoms than the acute cases and the physician finds that the illness extends over a long period of time. The inflammatory reaction is not so acute, the patient may state that with her illness she has never been confined to bed more than a few days at a time, but while the pelvic pain is not acute it is very persistent. These patients are seldom without pain. When the pain ceases there is still pelvic discomfort. The cases are treated locally with amelioration of symptoms, but the suffering continues. Every general practitioner sees many of these cases and the variety of local treatments they undergo is legion. All the free clinics are busy with the local treatment of these cases, as they constitute a very large number of the cases of tubal infection. It is this type of salpingitis that we find in the class of cases of the so-called "one-child sterility." When they are first married they are mildly infected by their spouse, promptly conceive, may escape a temperature reaction during the puerperium or not, depending upon the degree of immunity they have developed during the period of gestation. After the puerperium their recovery is masked, they keep complaining of pelvic pain, run a mild degree of fever, and may go on for years with this condition of subacute salpingitis. Not only do they suffer with an inflammatory process but they have a purulent salpingitis. How often does the surgeon open the abdomen in these cases, only to find pus in the tubes, often with a minimum degree of inflammatory reaction. Many of these women are up and about, nevertheless they are great sufferers and demand our earnest consideration.

In the early stages of the development of a salpingitis, before definite objective signs are obtained, unless we carefully study their history, we are apt to overlook these cases, and perhaps do them the injustice of classing them as neurotics, when in truth they are great sufferers and should have the relief surgery can offer them and not subject them to many years of invalidism and suffering. As time goes on, definite palpable signs develop in the pelvis. The tubes become distended with pus, they agglutinate with the ovaries, becoming tuboovarian abscesses. Sigmoid and loops of intestine become adherent, more or less solid masses develop in the pelvis, and the case becomes one that can be readily diagnosed. The proper diagnoses lead to the only sure method of cure that the present



stage of medical science can offer, namely: surgical ablation of the organs and the removal of tissues destroyed.

When medical science has developed to that stage of therapeutic stability, that it can have at its command the power to remove inflammatory infiltration from tissues anywhere in the body, then and only then shall we be able to cure these cases without ablation of certain generative organs. Until such a time poor suffering women will have to submit to the knife to cure them of these ailments.

Many of these patients, of course, never again conceive, remain barren, suffer from month to month, and year to year, until the infected tissues are ablated, or until Nature comes to their aid, by the evacuation of pus into some hollow viscus of the abdomen, such as the rectum, bladder, sigmoid, or loop of intestine. For a case of pyosalpingitis to end in this manner, of course, means untold suffering to the patient, and is not to be countenanced by an enlightened profession.

I make a plea here for an early diagnosis and for an early operation. The tissues are infected and function of child-bearing is destroyed. The function being gone, why allow these women to go on with useless suffering. Many of these women lead a life of invalidism, often they are not really very ill, but are never perfectly well. They complain of all sorts of pains. Many of them develop neuroses and they constitute a large proportion of the cases that finally lend themselves to all sorts of treatment by people outside of the pale of the medical profession. The watering places, the health resorts, the sanitariums all contain a quota of subacute pyosalpingitis cases. With each menstrual period their suffering is increased, some of them have to go to bed for one or two days of each month, while others with more stamina keep out of bed but eke out miserable days during each menstrual period. Their menstruation as a rule is disturbed, not only in the length of their periods but in the quality and quantity of the menstrual flow. Some of them have menorrhagia and metrorrhagia, their periods are prolonged over many days. Others again menstruate for a few days, stop for several days and then the flow begins again to continue sometimes for half a month. All degrees of disturbance are found with the menstrual function. These cases of chronic purulent salpingitis are in many ways very much similar to the individuals with chronic gastric ulcers. The latter have periods when they are fairly comfortable and then again periods of great disturbance with their digestion. So it is with these gynecological cases, they may remain well for many months at a time only

to have their suffering return. In this manner, they spend often years of suffering and invalidism. The patients are apt to be affected by conditions of the weather. They feel comparatively well during the balmy days and suffer as the weather conditions change. They are apt to be affected with pains in various parts of their muscular apparatus, indeed not infrequently one finds many groups of muscles affected with myositis, very much the same as in an individual suffering with rheumatism. Indeed these are really cases of rheumatic affections of the muscles and tendons. The etiology is almost the same as that of rheumatism and who knows but that they are real cases of rheumatic affection due to absorption of purulent material.

In many cases the suffering is entirely confined to the nervous system. Various groups of nerves such as the facial and supraorbital, the brachial plexus and the pelvic plexus are affected. I have seen several cases where the only evidence of a pelvic disease was that of a severe sciatica. The patient would suffer with these attacks of sciatica very severely. The usual remedies used for this malady proved unavailing until the source of the infection was removed and then a prompt recovery followed the operation.

It is not strange that these women do suffer with these various complaints referred to the muscular system, to the nervous system, or even to the gastro-intestinal tract, as well as pain and discomfort in the pelvic region, when we consider that they absorb septic material from day to day, from month to month, and year to year.

When these cases of pyosalpinx come to the operating table, we are in the habit of preserving as much ovarian tissue as possible in order to conserve the function of menstruation. Studying this phase of the question in recent years, I am not at all convinced that the preservation of this function is, after all, of such a great advantage to this class of patients. I have had opportunities to observe cases where the function of menstruation was preserved and cases where it was not. The cases that do not menstruate after operation it seemed to me, by escaping the periodic disturbance incident to menstruation, were very much better off. On the other hand, those operated cases who menstruate have been subjected to a great deal of suffering every month. Given a case where the ovaries are so greatly damaged by disease that the greater part of these organs have to be sacrificed, it is better for the patient to have the surgeon do a total ablation of all the organ if the patient's condition and technical difficulties will permit. If the uterus cannot be removed, then ablate the ovaries entirely so as to stop the menstrual function.

I shall cite but one case to illustrate this point. The patient, a young woman of twenty-two at the time of operation, married four years, gave birth to a child the first year of her married life. The following year she was infected by gonorrhea and for three years suffered with a subacute attack of purulent salpingitis. At the time of operation it was found that both tubes had to be ablated and both ovaries had to be resected. Her menstruation recurred after operation and after continuing for one year the periods entirely ceased. The cessation of menstruation was due to the fact that very little ovarian tissue was preserved at the time of the resection of the ovary. This imperative removal of most of the ovarian tissue at the time of operation seemed in the long run to have been of benefit to her. With each previous menstruation she suffered considerably and as soon as the menstrual function ceased, she improved wonderfully. By the removal of the periodic disturbance incident to menstruation her recovery was more prompt. It might be argued that in this particular case the original gonorrheal infection might have been a mild one and hence the complete recovery of the patient, but this in turn can be disproved by the fact that the infection in the urethra and bladder still existed for many years after the operation. While she suffered from this condition at times to a considerable extent, she was free of pelvic pain from which others suffer so much after operation when their menstruation is preserved. Early operation in these cases is advised, just as soon as the diagnosis is made, so as to anticipate the development of what might be called a neuromuscular syndrome.

The cases of recurrent attacks of acute pyosalpingitis constitute a class which will admit of a ready diagnosis at the bedside. As a rule these occur in patients somewhat advanced in years who have been more or less sterile during their married life, but who have been free of pelvic disease sometimes for many years. No source of infection can be demonstrated in this class of cases at the time of the attack. The attack of pyosalpingitis comes on as from a clear sky in the midst of perfect well being. They are taken down with acute pelvic peritonitis, with great prostration, almost as acute as in the acute cases of pyosalpingitis. The abdomen becomes distended, the temperature and pulse rises, the pain is, at times, very severe, and we seem to have before us a patient with a fulminating case of peritonitis. If we question these cases carefully we find a typical history. They have had attacks of acute pelvic infection many years ago, which in some cases, they have entirely forgotten, but questioning them on this point brings back to their mind the facts of earlier pelvic disease. They have remained sterile all through their married lives, they have had more or less disturbance with their menstrual function, but as a whole have been fairly well for many years. Pel-



vic examination reveals considerable disturbance in the uterine adnexa, usually unilateral. An illustrative case of this type of pyosalpingitis was in the case of Mrs. W., the history being as follows:

She was forty-seven years of age and still menstrually active. She was seized with a sudden attack of pain in her left side which was very severe, necessitating the administration of several hypodermics of morphine. The physician who saw her was unable to make a definite diagnosis because no source of pelvic infection was appreciable at the time of the attack. Abdominal examination showed extreme tenderness over the left lower quadrant of the abdomen. Bimanually a mass could be made out in the left side of the pelvis. The patient says that she has been perfectly well for many years, that she had not suffered with any pelvic disease, that she had been married twenty-three years and had never conceived. At the time of operation a typical tuboovarian abscess was discovered, which was removed and the pus cavity drained. The right tube was the seat of a chronic obliterative salpingitis. Later questioning of the patient disclosed a typical history of gonorrheal infection. Here was a case where the infection must have been lying dormant for many years, only to start up anew and give rise to an acute recurrent attack of pyosalpingitis. In these pus collections, as a rule, no microorganisms can be demonstrated. They are safe surgical risks.

In connection with this subject the question may be asked in what manner do these acute recurrent pyosalpingitis cases arise? There is no doubt that the question of immunity is an important factor. Is it not possible that in these cases the immunity that has developed during the first attack of inflammation has lasted for many years? Although the lurking infection was present it never showed itself by a reaction until the immunity, so to say, has dissipated itself, and when that has occurred the infection broke out again and gave rise to a new attack. This phase of immunity is but slightly understood. We are very well aware of the existence of an immunity but in what manner this acts and how long it lasts, how it keeps in abeyance the lurking infection in the system, are still matters that are very little understood.

*Etiology.*—The etiology of pyosalpingitis may be classed under two headings. First, those caused by gonorrheal infection and second those caused by pyogenic infection. Those belonging to the first class are by far the more numerous. It has been estimated by competent observers that 66 per cent. of all gynecological infections are due to the gonococcus. The gonococcus, we must admit, soon disappears from the field of infection but, so to speak, prepares the field for the succeeding pyogenic infection and for the



colon group of bacilli. The gonococcus as a rule infects the surface epithelium. The vulva and the glands that are located in the vulvar region are first involved or the cervix and the uterine mucosa may be the first seat of infection. From this region the Fallopian tubes become invaded and the infection then spreads to the pelvic peritoneum as well as to the ovaries. The other type as a rule starts either from a septic abortion or during a puerperal infection and spreads by the lymphatics and by infectious thrombi. There have been cases reported where the pelvic infection was supposed to be due to inflammation of the appendix, but this source of pelvic infection must be extremely rare. I have never seen a single authentic case of this kind of infection of the pelvic organs.

*Diagnosis.*—The diagnosis of these three types of pyosalpingitis is, as a rule, readily made. In acute pyosalpingitis we have the history of an acute infection either by the gonococcus or pyogenic germs, an acute onset and all the cardinal symptoms of an acute infective reaction. In the subacute cases we have the history of the infection at a remote date, we have a long period of suffering dotted here and there with subacute attacks. We have a train of symptoms indicative of a septic abortion. Upon these points we can base a clinical diagnosis. In the recurrent attacks of acute pyosalpingitis we have a history of sterility or a history of an acute pelvic onset of the disease, a long period of wellbeing and now a sharp attack of inflammatory reaction in the pelvis. The clinical value of making these differentiations is considerable because in the acute cases the line of treatment is very much different than in the subacute and the acute recurrent cases. While in all the three classes of cases surgical intervention is the proper mode of treatment, in the acute cases operation should be deferred for a reasonable length of time to insure the development of an immunity. In the acute attacks deferred operation gives a better prognosis, while in the subacute and in the acute recurrent cases immediate operation after the diagnosis has been made is a safe procedure. It is from this point of view that a differentiation between these different types of pyosalpingitis is of much clinical value.

At the Woman's Hospital it has been the policy for many years to treat these acute cases in the following manner: If a patient comes to our wards with an attack of acute pyosalpingitis, where the infection is of recent date, the patient is put to bed, an ice-cap is placed on the abdomen and the case is treated purely on symptomatic lines. Of late, instead of applying ice-bags we have been baking these cases with dry hot air, with considerable success. Should the

septic absorption be very severe, as indicated by sharp rises of temperature and chills, an attempt will be made to reach the focus of pus by the vagina. If this is not feasible, nothing further is done surgically. The nutrition of the patient is kept up as is consistent with the capabilities of the digestive function. The bowels are moved with enemata, the pain is relieved with anodynes, and as much fluid is given as can be taken by the patient. As these women always suffer from a certain degree of acidosis, this is combated by the proper administration of alkalies. The blood reaction to the inflammations is estimated frequently. The case is not hurried to the operating table until a reasonable time has elapsed, during which time we feel sure that a certain amount of immunity has developed. This is estimated by the fact that although the abdomen is still rigid and the pelvis filled with inflammatory reaction, the temperature has a tendency to reach the normal. The pulse has become more steady, the patient's suffering is less, sleep has returned and the patient looks as though she was steadily improving. When this stage has been reached there is greater safety in operation than during the acute onset of the disease.

Our mode of treatment, however, with the subacute cases of pyosalpingitis and the acute recurrent cases is entirely different, here operation is deferred to a less degree and we are reasonably sure in these cases that the prognosis is good. As a rule the patients stand operation well and their recovery is prompt.

The question, what to remove in these cases at the time of operation, is one that has not been settled. Shall the infected focus be excised alone or shall the uterus, tubes and ovaries be removed in all of these cases?

It is of interest, therefore, to note here the kind of operations that were performed on the 100 cases included in this report. In 62 per cent. both Fallopian tubes were ablated. In 15 per cent. only one tube was removed. In 18 per cent. the uterus, both tubes and ovaries were removed. In 43 per cent. one ovary was removed at the time of the operation for pyosalpinx. Both ovaries were removed in 18 per cent. of the cases. The appendix was removed in 28 per cent. In 8 per cent. one or more plastic operations were also performed, such as trachelorrhaphy and perineorrhaphy. Three times the round ligaments were shortened at the time of the operation. In only 5 per cent. of the cases was vaginal section done when pyosalpingitis was diagnosed. In 26 per cent. of the cases the uterus was curetted at the same time. In 2 per cent. a myomectomy was performed.

The question may be asked, why was there no hysterectomy performed in the 18 per cent. of cases where it was necessary to remove both ovaries? The answer to this question is found in the fact that a hysterectomy means an added risk. It requires unusual surgical judgment to decide what to do and what to leave undone, in many of these cases of pyosalpingitis. It is freely admitted that in pyosalpingitis where both ovaries have to be sacrificed, the removal of the uterus is advisable, as in all of these cases the uterus itself is infected and its ablation will prove of advantage to the patient. However, the surgeon who makes it a rule to remove the uterus in every case where both ovaries have to be removed, will find his operative mortality rise. There can be no hard and fast rule established regarding this point in the operation. The surgeon must exercise his best judgment in each instance. In many cases the technical difficulties of the operation are such that the uterus is better left untouched, while in others the condition of the patient may call for a short operation with the least possible amount of traumatism.

Death occurred in one case thirty-six hours after operation, from profound sepsis. The patient was thirty-nine years old, and had a large tuboovarian abscess. A double salpingo-oöphorectomy and appendectomy was performed. The case was serious from the start. Every time her temperature was taken it was found higher and it finally reached 106° F. She apparently died of peritonitis. No autopsy was permitted. This gives us a mortality of 1 per cent.

It is noted that in 28 per cent. of cases the appendix was also removed. It may be asked, is this a good practice? This question can be answered in the affirmative. If the appendix is diseased it should, of course, be removed. If it is not diseased but appears abnormal, it should be removed, in the type of cases designated in this paper as subacute salpingitis or acute recurrent salpingitis. But in the acute salpingitis cases unless the appendix is diseased, it is better not to remove it as it is not advisable to open up new avenues for infection. An undamaged peritoneum can cope with infection more successfully than a traumatized one. In the large majority of cases of pyosalpingitis the pus is sterile and therefore the removal of the appendix is not attended with any danger, but in the acute cases the pus may be quite active with germ life and the risk of spreading the infection is great.

*Résumé of Operations.*

Removal of uterus, both tubes and ovaries.....	18 cases
Removal of both tubes.....	62 cases
Removal of one tube.....	15 cases
Vaginal section for pus.....	5 cases
<hr/>	
Total.....	100
One ovary removed.....	43 cases
Both ovaries removed.....	18 cases
Appendix removed.....	28 cases
Ventrosuspension.....	19 cases
Plastic on cer. and per.....	8 cases
Short. rd. ligaments.....	3 cases
Divulsion and curettage.....	26 cases
Myomectomy.....	2 cases
Hemorrhoids.....	1 case

The round ligaments were shortened three times and myomectomy was done twice; this means that five intraperitoneal operations were done of a plastic nature in the series of 100 cases. While it is perfectly safe to do this in the majority of instances, in the acute cases one should confine himself to the removal of the diseased organ and traumatize the peritoneum as little as possible. It is, however, good practice to suspend the fundus from the abdominal wall where there is a tendency to retroversion of the uterus, as this operation traumatizes the peritoneum to a very slight degree. By preventing the uterus from becoming adherent in an abnormal position much suffering to the patient will be avoided.

Plastic operations on the cervix and perineum were done only in eight cases. This is not because the operation is not safe, but because the largest number of these cases have no lacerations to repair. By the very nature of the disease they are sterile. This much, however, may be said in connection with this phase of the subject, that plastic operations require time for their performance, and the time factor is of importance. One should not start plastic operations without first giving the matter due consideration, as one does not know before the abdomen is opened just how much work has to be done and how much time will have to be spent on the operation. It is perhaps better to open the abdomen first, finish the intraabdominal work and then, if the patient's condition permits, sew up the lacerations of the perineum. There is still another reason why it is better practice to do the intraabdominal work first, namely, should it be necessary to introduce drainage by the vagina, the



newly sutured wound of the perineum will be exposed to infection from the purulent material that has to drain over it.

With reference to drainage, the statistics show the following. In fifty cases no drainage was found necessary. In forty-three cases the pelvis was drained by the vagina and in six cases by the abdomen. In one case the pelvis was drained both by the vagina and abdomen. Experience at our institution has shown that abdominal drainage is not as objectionable as has been thought to be in former years. We find that hernia is not common after abdominal drainage. In fact, in proportion it is less common after drainage from above than in those cases where drainage was instituted from below. The reason for this is the fact that when drainage is instituted above, less cases of breaking down of the abdominal incision occur, than when the drainage is introduced from below. The breaking down of the abdominal incision means subsequent hernias. In the forty-three cases drained from below, the abdominal incision broke down in six cases, which means six hernias, or 14 per cent. In the six cases of drainage from above the incision healed in every case, hence no hernia. The reason why hernias develop less frequently now than formerly is that the abdominal incision is secured by a better suture technic than in former years. By suturing the various layers of the abdominal wall separately, better union will occur and less liability to breaking down than was the case in former times. To these details of the closure of the abdominal wound we are indebted for better result. When drainage is instituted from below by way of the vagina, many of these infected foci in the pelvis cannot be drained from below, the result is that the infected material consisting of blood, fibrin, pus and broken down tissue accumulates and finally reached the abdominal incision, through which it breaks and thus favors the formation of postoperative hernia. At the Woman's Hospital we do not hesitate to drain from above when the foci of infection are so situated that they can be more readily drained from the upper route nor is it necessary to make counter drains. There has also been an improvement in the method of draining. We find that a rubber drain is superior to a simple gauze drain, but the drainage should not be done by rubber tubing but by rubber tissue in which gauze has been wrapped. Indeed gauze drainage is only used when bleeding has to be stopped and where large raw areas of bleeding surface must be controlled by pressure, the insertion of gauze is imperative.

*Recovery from the Operation.*—In 85 per cent. of the cases the recovery was "smooth." By this is meant that there was but a

moderate rise of temperature and pulse after operation, that there were no complications such as hemorrhage and shock, that the patient did not suffer unduly, that there was but little or moderate distention of the abdomen, that the bowels moved with enemata or mild cathartics, and that the incision healed satisfactorily.

In 15 per cent. of cases the recovery was "stormy." In these cases there was more or less shock after the operation. The temperature and pulse rise was considerable, the distention of the abdomen more or less marked and the suffering in some cases quite intense. Anodynes and stimulants had to be used freely, which further complicates the condition. These cases require saline infusions, stomach lavages and a good deal of nursing. Their convalescence is retarded and some of them come out from under the operation, considerably wrecked. It is, however, interesting to note how complete is the recovery of these very sick cases, when the focus of infection is removed.

The statistics show that these cases remained at the hospital for a comparatively short time, as follows:

1 case.....	10 days
22 cases less than.....	20 days
25 cases less than.....	25 days
25 cases less than.....	30 days
12 cases less than.....	35 days
9 cases less than.....	40 days
5 cases less than.....	50 days
1 case.....	103 days

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Total, 100

The number of days that the patients remain at the hospital is practically determined by the incision in the abdomen. If the incision heals by primary union the patient's stay in the hospital is limited. Suppuration means delay all around, delay in healing and delay in the hospital, as well as delay in the final recovery. One case left the hospital in ten days. This is unusual, but it shows how fast an incision can heal and how quickly patients can recover. One case remained in the hospital 103 days. In this case the abdominal wound broke down and she also had a complicating crural phlebitis. Nothing retards recovery so much as a phlebitis. The patient is practically well but absolutely helpless, and there is nothing to do with ward cases particularly, but to keep them at the hospital.

In conclusion, I may say that the study of these cases shows that

the operations for pyosalpingitis are safe, the mortality is very low, the largest number of cases occur in the early decades of life, that in 50 per cent. of cases no drainage need be used, that in 85 per cent. there is a smooth recovery from the operation, that the patient can leave the hospital on an average of two and a half weeks after operation.

501 WEST ONE HUNDRED AND TENTH STREET.

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## SURGICAL RECORD SYSTEM OF THE WOMAN'S HOSPITAL.

BY

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THE value of the surgical and medical records of a hospital is in proportion to the thoroughness and accuracy with which they are compiled, not only for each individual patient, but in the painstaking bringing together of similar groups of diseases and treatments under their various heads.

It is only in this manner that the enormous material passing through the hospitals of the country can be made of value to the student of medicine, to the profession at large and to the patient in the future.

The patient as he or she enters the hospital should not be solely in the light of the recipient of our care, but also as one from whom something is to be learned, if not through the unusual condition found, certainly by associating the disease, the treatment and the result with those of a similar nature; and by the compilation of the cases to draw positive conclusions of value to the profession in general.

Unless every detail of the findings of the condition of the patient, of the treatment given and of the recovery is carefully noted in the records, the individual history is of little value for future reference. As an individual record no matter how carefully made, its scientific value is little, unless associated with and studied as one of a group of many of a similar character. It is here that the persistent care in filing becomes of so much importance.

It matters not what system is adopted, whether filing according to diseases or by hospital numbers with an added index of diseases, so long as the two essentials of a working system are fulfilled, that of

being able to refer to an individual history without loss of time, and that of being able at all times to study collectively diseases of similar groups with their treatment and their recovery.

The histories of the Woman's Hospital, until ten years ago, were no better than those of the average hospital, nor were they any worse. The method in use at this period was that of making a full record of each patient during her stay in the hospital and filing such records according to the entrance number of the patient.

The description of the operations were written up by the House Surgeon after his day's work, or as soon as possible thereafter. The pathological reports on specimens sent to the pathologist were properly filed, yet all specimens were not examined.

This was the method in vogue during the past decade. They were in the majority of instances as good records as those made in hospitals in general. From the standpoint, however, of lessons to be drawn from their study, they are practically valueless, in that it would be a hopeless task to attempt the study of large groups of similar operations. To make them of service for such a purpose the entire collection from the organization of the Hospital in 1856 would have to be examined and cross-indexed.

This method, which is to an extent in vogue in the large majority of the hospitals, admits of many inaccuracies. It is more than we can expect of a House Surgeon to obtain from him an accurate description of the findings at the time of operation and the method followed, especially if the field of work is in good view only to the operator.

Nor can we hope to maintain useful records so long as the responsibility is thrown on the House Staff, whose duty is primarily the care of the patients and whose interest in the written records is at a minimum.

This is the reason for the failure in most hospitals in the matter of histories. These young men spend only a limited period in the hospital, their primary duty is the care of patients, any additional work in history making does not appeal to them nor will it be well done.

The keeping of the detailed records of the diseases and treatment of the patients of a hospital for the care of whom the institution is being maintained, too often receives no consideration and is left to be cared for by the transient house staff, under the direction of the attending staff, who give but scanty thought to the subject. Under such circumstances we have no one to blame for the poor results but ourselves.



The governing board of a hospital is usually made up of business men who recognize the importance of providing for the accurate accounting of the economic and financial side of the institution. The medical and surgical matters are sealed books to them and they must of necessity place the whole responsibility for such upon their attending medical board. When the necessity of a specified course is laid before them it is as a rule gladly adopted, especially so when the importance of such a course is clearly explained to them.

This has been our experience at the Woman's Hospital and as a result the present system of maintaining the surgical records of the institution has been devised. The underlying basis of this system is the same as in a few other large hospitals, that of recognizing that a continued efficient work must be carried out by paid clerks, whose sole responsibility is that of the work before them. And furthermore where there is a large surgical board, as in our instance, the supervision of this work should be assigned to one of its members, aided by a younger assistant.

It is only by this method of fixing the responsibility that permanent and satisfactory results can be obtained. Toward this end, three stenographer historians are employed by the hospital, of whom one is responsible for the entire work of the department.

The duties of these stenographers are:

1. Receiving the dictation and transcribing the findings and various steps of each operation as given by the operator at the close of each operation.

2. Typewriting the histories of each new patient as furnished by the member of the house staff, whose duty it is to take histories.

3. Receiving the dictation and transcribing the pathological reports as given by the pathologist.

4. Making up the index cards for diagnosis and operation of all patients who have been discharged from the hospital and filing the same.

5. To be responsible for the proper filing and care of all surgical histories of the hospital.

6. Conducting all the details of the "Follow-up System" as introduced in the hospital for ward patients.

The "Follow-up" consists of

1. Making a short abstract of each discharged patient on the abstract card as furnished.

2. Making out and filing the "Return Card" for each patient.

3. Taking the dictation of the examiner and transcribing the results of all examinations of returned patients.

4. Notifying each patient at least a week or ten days ahead of her specified time for return, that she is expected to come back to the hospital for examination.

To amplify the above, that they may be the more clearly understood, let us take up the matter of the description of the findings and steps of operations. The old custom was that such accounts were to be written up by the House Surgeon, who acted as the first assistant to the operator. This method has many well-recognized weaknesses and gives rise to frequent erroneous statements, vitiating the value of the history for further study.

The method of requiring the operator to write up his own accounts or of dictating his findings and technic at a later time, while giving more accurate histories, is still open to serious criticism on account of the frequent interruptions and the press of engagements of the surgeon. This method is in use at one of our largest teaching hospitals and it is amusing to see the daily posting of surgeon's names as neglecting to give the time to dictate certain operations of the day previous.

The custom in vogue at the Woman's Hospital is that such dictations shall be given by the operator before he leaves the operating room, in fact it is usually given while the surgeon is closing the wound. The stenographer is notified toward the close of the operation. She comes at once to the operating room and signifies her presence by saying "stenographer." The surgeon can then dictate while he is finishing his work without interfering with the routine of the clinic.

The history as given by the patient on her admission to the ward is taken by one of the resident staff. As a guide for his questions a printed outline is attached to each sheet. This history as taken is turned into the history room, where it is typewritten and placed upon the individual chart within twenty-four hours after the patient's entrance.

No. 1

HISTORY

Name.....	No.....	Surgeon.....
Address.....		Rec. By.....
Age.....	Nativity.....	M.S.W.....
	Admitted.....	Occupation.....
Relative or friend.....		
Physician.....		

Outline to be Followed

Chief Complaints.....
.....
Family History.....
.....

Deaths—cancer, tuberculosis, syphilis. Nervous affections. Health of living members.

Previous History.....

1. Menstrual—age at onset, duration, scant, moderate, profuse. No. of napkins daily (stained or saturated), regular or irregular, interval, pain, last period.

2. Marital—how long married, No. of children, ages, nature of deliveries, lacerations, repair, puerperia. Abortions or miscarriages—No., last, induced or not, infection. Venereal diseases. Husband's occupation.

3. Illnesses.—Circulatory, respiratory or renal symptoms, injuries, operations. Present Symptoms.....

1. Menstruation—how changed. Pain—when, character, duration, location. Menorrhagia, metrorrhagia.

2. Vaginal discharge—quantity, color, consistency, odor, time of.

3. Nervous and mental. Pain—character, location, constant, occasional, associated with. Backache—location, constant, occasional, associated with. Headache—location, constant, occasional, associated with. Intermenstrual pain. Bearing down or distress in pelvis. Dragging sensation or distress in flanks. Position of comfort when reclining—back, right side, left side. Position of discomfort when reclining, why? Nervousness—character of Flashes. Irritability. Easily tired by exercise. Insomnia—refreshed or not by sleep. Emotional control.

4. Gastrointestinal—appetite, digestion, gas, relation of gastric distress and pain to meals, nausea, vomiting—time of, character of vomitus. Jaundice, clay-colored stools. Bowels—control of, constipation, diarrhea, pain, blood, mucus.

5. Urinary—painful or frequent micturition, day, night, blood, control, retention.

6. Abdominal swelling or tenderness.

7. Vaginal protrusion, when?

8. Fever, chills.

9. General condition—loss of strength, weight—maximum, present.

The index cards for diagnosis and operation (Nos. 2 and 3), are made out by the stenographer historians under the instruction of a junior member of the attending staff. The "International Nomenclature" is the one in use with some minor additions. The operations

		No. 2			
Hist. No.	DIAGNOSIS	Dr.			
NAME	Operator	Condition upon Discharge			
		C	I	UI	D
Laceration of Cervix.....		#			
Myoma Uteri.....		#			
Cervical Polyp.....		#			

on the majority of patients are usually multiple. In order to make the proper filings of each operation and at the same time to show its relation to the several other operations on the patient, the complete

No. 3					
Hist. No.	OPERATION	Dr.	Suc's	Par'l	Fail'r
Date		Operator.....		Suc's	
D. & C.....					
Trachelorrhaphy.....					
Perineorrhaphy.....					
<b>Myomectomy</b> .....					
Appendectomy.....					

list is tabulated on as many cards as there are operations. On each card one of the operations is typed in rotation in red. The filing of the card is as the red typing indicates. The same system is followed in instances of multiple pathological states on the diagnosis card.

It is impossible to get a large staff of operators to use the same terminology in diagnosis or operations. The terminology of the surgeon is, therefore, accepted as given and subsequently changed to that of the "International Nomenclature" in use. There is little difficulty in doing this; it is a matter of training of the stenographers and some counsel when at times they are in doubt.

At a specified daily hour a stenographer is sent to the pathological laboratory to type the dictation of the pathologist, on the macroscopic and microscopic work of the day.

The complete physical examination is made on a sheet for the purpose, as are also all other scientific and laboratory studies, and reports from the x-ray department, the cystoscopic department, etc.

The history of the patient as now completed with the attached bed-side notes of the detail of her treatment, together with her temperature and pulse record, is sent to the record room on the discharge of the patient from the hospital.

It is now the duty of the junior attending surgeon of each division to go over such histories within a few days to see that no errors appear.

After receiving his signature, the stenographers make a cross-index of all operations done and of the diagnosis made of pathological conditions present, by following the method previously described of filing multiple conditions and operations under their various and separate heads.



## THE "FOLLOW-UP SYSTEM."

To keep in touch with the patients after they leave the hospital requires something more than the giving of a card of reminder and a request that they shall return at a specified time for reëxamination. The personal element enters largely into the success of this effort. When this system was first inaugurated in the hospital, the return card was given by one of the nurses of the ward, who was expected to explain to the patient the object of her returning. The nursing force of every ward, as in all training schools is constantly shifting and it is a question as to whether all of them entered closely into the spirit of the return of patients for examination. The necessity of some responsible person for this purpose being evident, the matter was presented to the Board of Governors, who authorized the assignment of one nurse from the social service department for this purpose.

The duties of the nurse thus assigned is to make daily visits to the wards, to explain fully to each outgoing patient the object of her returning and the patient is given by her the 'return card' as here shown. The personality and interest of the nurse assigned to this duty enters greatly into the number of returns. The nurse in question also visits all patients at their homes who after a second notice fail to return. As a result of looking up such patients the social service, reports for six months, 245 patients found, of whom 208 returned and six had died, only thirty-one would not give the time to return.

---

No. 4

## DISCHARGE CARD

**KEEP THIS CARD**

Hospital No. \_\_\_\_\_ Surgeon \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_

Date of Discharge \_\_\_\_\_

Return to Hospital for examination at 10 o'clock \_\_\_\_\_

---

The utilization of the services of the social service department of the hospital in our "Follow-up System" is of greatest value not only in having the service of one of their nurses assigned for this purpose, but also in looking after the convalescent and needy patients, the purpose for which this department was organized. For the

No. 5

**RETURN CARD**

Date of Operation \_\_\_\_\_ Discharged \_\_\_\_\_  
 To Return for Examination \_\_\_\_\_  
 \_\_\_\_\_  
 Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 Friends Name \_\_\_\_\_  
 Address \_\_\_\_\_  
 Referred by \_\_\_\_\_  
 Address \_\_\_\_\_  
 Surgeon \_\_\_\_\_

---

purpose of the records of the "Follow-up System" a return card is made out for each ward patient and filed under a date ten days previous to that on which she is told to return. Each morning notices are sent to all patients whose return cards are on file under this date. The notice is as follows:

---

No. 6

**WOMAN'S HOSPITAL**  
 IN THE STATE OF NEW YORK  
 110TH STREET  
 BETWEEN AMSTERDAM AND COLUMBUS AVENUES

New York \_\_\_\_\_ 191 \_\_\_\_\_

---

Dear \_\_\_\_\_

You are requested to return to the Hospital at 10 o'clock in the morning, on or about \_\_\_\_\_ for the purpose of examination, in order that we may know the result of your operation and treatment.

You may need advice, and by returning as we direct, you will not only be doing something for yourself but possibly for others.

**Bring your card with you.**

Very truly yours,

---

If the patient does not respond within two weeks a second notice is sent out. If this is not answered the patient's name and address as also that of the friend are given to the social service for the purpose of tracing, with the results I have given above.

We have found that for our purposes it is better that the histories be bound in serial numbers of fifty histories to the volume. It is necessary, therefore, that an abstract card be made out from the history of each patient for the purpose of the "Follow-up System." These cards are  $9\frac{1}{2}$  by  $7\frac{1}{2}$  inches. On the back of this abstract card is typed the findings on each subsequent visit of the end results of the operations done (No. 7).

---

No. 7		
Name.....		Hospital No.....
<hr/>		
Address.....	Referred by.....	Admitted.....
S. M. W.....	Address.....	Discharged.....
Age.....	Friend.....	Operator.....
Chief Complaint.....	Address.....	Anes.....
Preop. Diagnosis.....		
Postop. Diagnosis.....		
Path. Diagnosis.....		
Operation.....		
Impor. Points.....		
Convalescence.....		

---

These cards are filed in alphabetical order.

There are positive labor disadvantages in making out these abstract cards. In many ways it would be better to add the end results to the surgical history by the insertion of an extra sheet. This is done in some hospitals, notably the Presbyterian. There are, however, some disadvantages in this, and after viewing the matter from various angles it was thought better from the standpoint of collective study and in the end to be more economical, to follow the plan we have adopted.

The "Follow-up System" has upon its files for the past year 1280 ward patients. Of these 240 had given wrong addresses, as also incorrect addresses of their friends. We have records of the returns and end results of 880 of the patients, or about 87 per cent., which is very satisfactory. The reëxamination of patients takes place each morning at a definite hour with the exceptions of Sunday. If the result is not satisfactory the operator is notified by letter, the name and address of the patient being given, that he may have her seen and sent back to the hospital if he thinks it best (No. 8).

No. 8

WOMAN'S HOSPITAL

IN THE STATE OF NEW YORK

110TH STREET

BETWEEN AMSTERDAM AND COLUMBUS AVENUES

\_\_\_\_\_ 191 \_\_\_\_\_

My Dear Doctor:

The present condition of \_\_\_\_\_  
\_\_\_\_\_ at (Address) \_\_\_\_\_

does not appear to the examiner to be all that you may wish (surgically, symptomatically).

The patient has been instructed to call upon you at your office.

This notice is sent that you may communicate with her if you desire.

Date of Operation \_\_\_\_\_

Character of \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

The method of keeping our surgical records as described above we are fully aware is by no means perfect, nor am I aware of any system that is in every detail ideal. The method best suiting our hospital may not be at all practical in another, as for instance in a general hospital a patient in the large majority of cases enters its wards for one condition and all other concurrent troubles are complications and are to be classed as such. With gynecological hospitals such as the Woman's the majority of our patients have multiple conditions no one of which can be classed as the major disease. Evidently the method of filing the records of the general hospital with its single diagnosis and complications is not applicable to the gynecological service with multiple diagnosis.

Our present method though not thoroughly satisfactory in every detail even to ourselves gives us an easily accessible large collection of accurate data on all the phases in our specialty. The files in the record room are for the common use of all the surgical staff of the hospital and each member is urged to utilize them freely for his own study and for the purpose of papers he may be preparing.

148 WEST SEVENTY-SEVENTH STREET.

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## BLOODLESS REPAIR OF THE CERVIX UTERI.\*

BY

ALFRED HEINEBERG, PH. D., M. D.,

Associate in Gynecology in the Jefferson Medical College, Assistant Gynecologist to St.  
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Philadelphia, Pa.

(With four illustrations.)

AN operative field which is not obscured by a continuous flow of blood in plastic repair of the cervix uteri presents several advantages. It permits of greater precision and more speed in denudation of the lips in Emmet's operation and in the formation of the flaps in the several methods of amputation.

Coaptation of the flaps of denuded surfaces may be more carefully and exactly done and thus avoid gaping of the edges between the

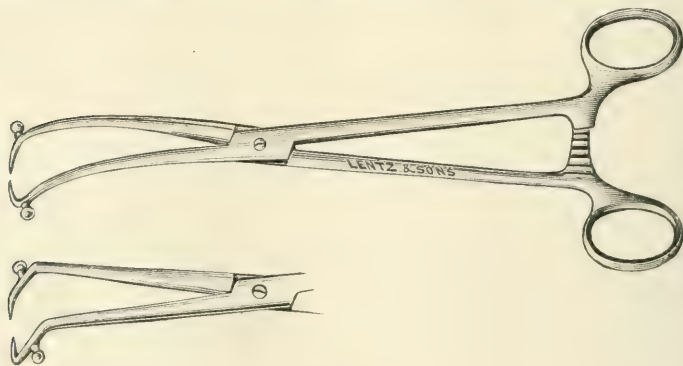


FIG. I.

points of suture and delay in healing. All of these features insure a good result. While the amount of blood lost during the average cervical repair is inconsiderable there are cases of high amputation in which the degree of hemorrhage sometimes constitutes an important and, it may be, a determining factor in the recovery of the patient, especially when the amputation is followed by an extensive plastic repair of the vagina and an abdominal section.

A bloodless operative field is especially desirable in cases of cervical repair when the operative difficulties are increased by a long, narrow vagina or by our inability to draw the cervix down because of fixation of the uterus.

\* Read before the Philadelphia Obstetrical Society, January 3, 1918.

The technic of bloodless repair which is here described represents the result of several months experimentation with various types of clamps, pins and tourniquets which were devised, tried out and discarded. It combines simplicity, ease of application and efficiency. The method as shown by the illustrations, is as follows:

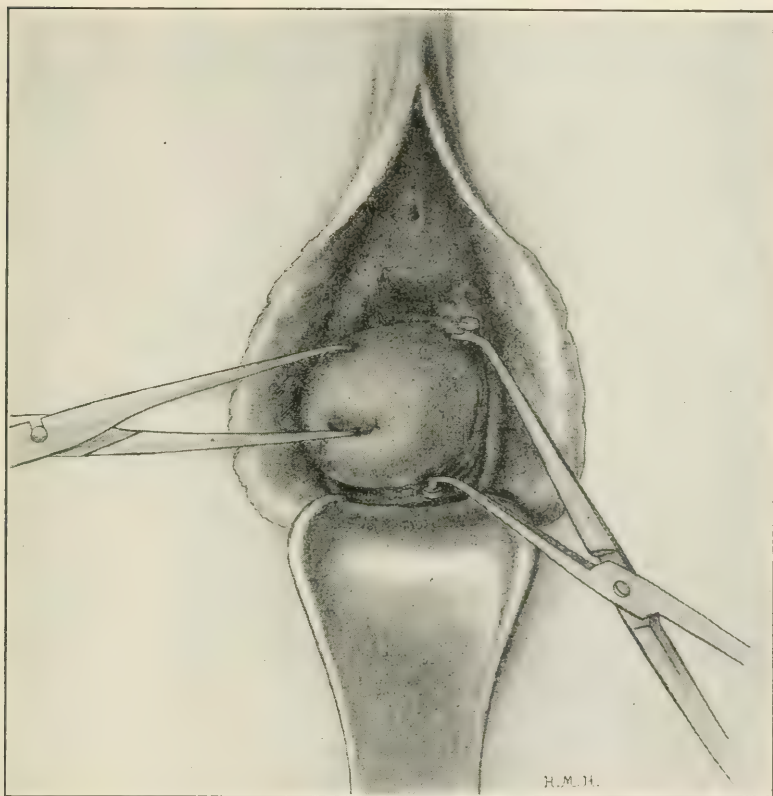


FIG. 2.—Showing the cervix drawn to one side and the application of the special forceps to one side of the cervix above the line of the proposed repair.

Hemostasis is secured through the use of two angulated tenaculum forceps (Fig. 1) and a rubber ring such as is sometimes employed to hold together the tops of umbrella ribs. The chief feature of the forceps in addition to the angulation is a pedunculated ball which is attached to the outer aspect of each blade above the angle. The balls serve the purpose of retaining the rubber ring in a position to compress the cervix above the grasp of the forceps.

The technic is as follows:

1. Introduce a self-retaining speculum in the vagina.
2. Grasp the anterior lip of the cervix in the median line with an ordinary double tenaculum.
3. Dilate the cervix moderately, chiefly to determine the precise location and direction of the canal. Curet the uterus if desired.

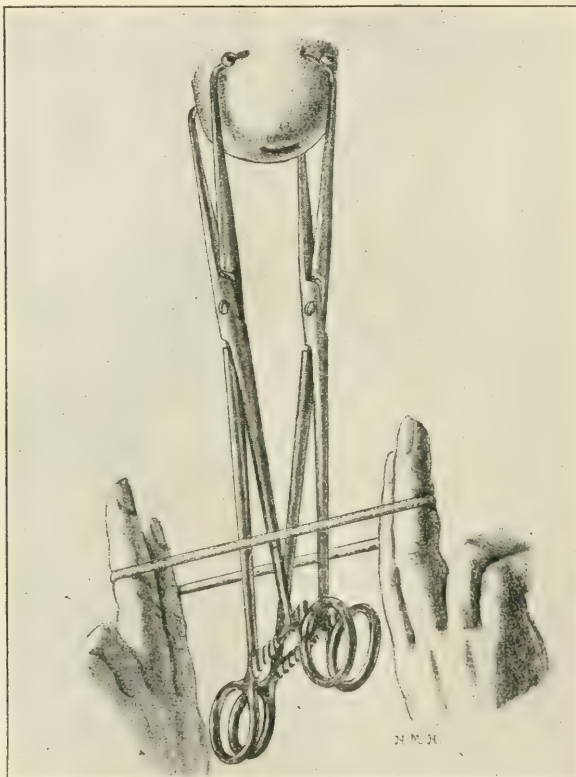


FIG. 3.—Showing the method of stretching the rubber band over the handle of the forceps.

4. Draw the cervix toward one side and apply the angulated forceps to the cervix well above the level of the proposed amputation or denudation.
5. Draw the cervix to the other side and apply the second angulated forceps opposite the first one (Fig. 2).
6. Remove the ordinary tenaculum.
7. Place the handles of the forceps together. Stretch the rubber

ring over them and push the ring up on the cervix to above the retaining balls (Fig. 3).

8. Separate the handles of the forceps and hand them to an assistant (Fig. 4).

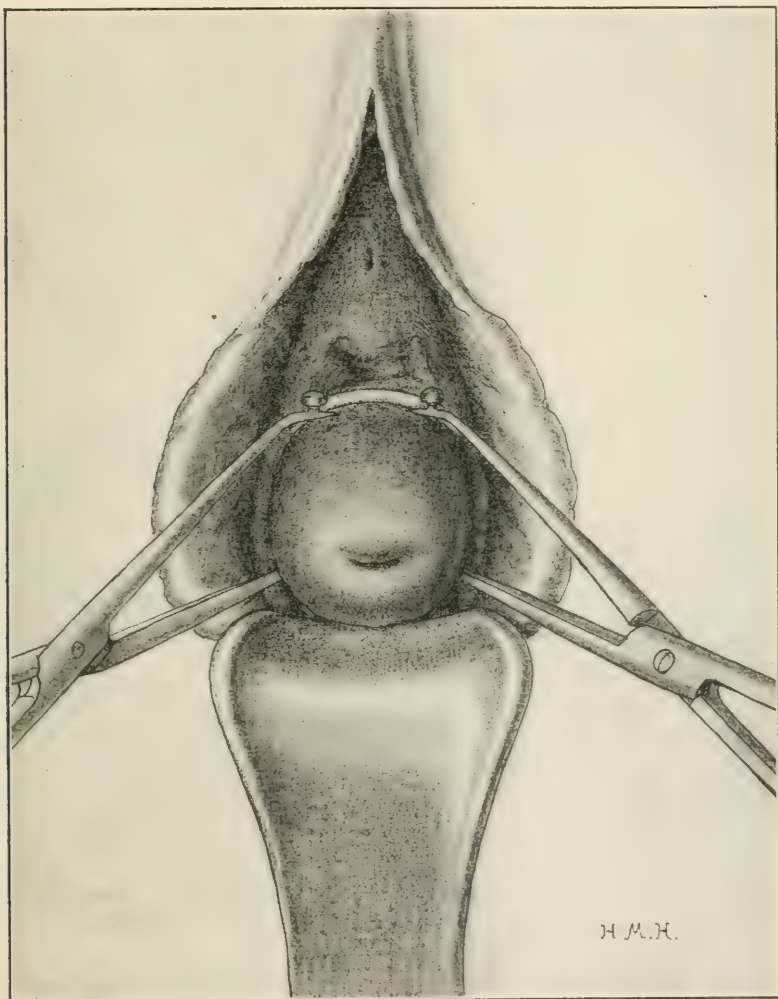


FIG. 4.—Showing both forceps and rubber band in position. Note how the forceps act also as lateral retractors of the vagina.

It will be observed that the forceps thus held act also as lateral retractors of the vagina. During the progress of the operation the assistant should avoid undue tension upon the forceps or unnecessary



separation of the handles in order to prevent making a ragged tear in the cervix with the points of the forceps. After the repair has been completed remove the forceps and the rubber ring.

If it is desired to remove the forceps and ring before tying the sutures the ring should be cut.

When the vagina is long and narrow or the cervix cannot be easily drawn down I have found that a forceps with a long curve instead of an angle can be more easily applied (see Fig. 1).

The curved forceps have the pedunculated balls just as the angulated ones.

1642 PINE STREET.

## THE PRESENT STATUS OF DEEP RADIOTHERAPY.\*

BY

FREDERICK J. SHOOP, M. D.,

Brooklyn, N. Y.

THE medical literature of the past year contains reports from thirty or more of our prominent radiologists on the subject of x-ray therapy and radium-therapy both in superficial and deep-seated benign and malignant diseased conditions.

In looking over these compilations, one cannot help being impressed with the idea that despite the extravagant claims of the over-enthusiast on the one hand and the carping criticism of those of our profession, on the other, who condemn the use of this agent and would throw it into the discard along with the relics of antiquated and useless remedies, that radiotherapy from these two sources has come into our therapeutic realm, is here to stay and the majority of those who use it are gradually establishing a more rational and scientific mode of procedure in its application and are using a greater care in the selection of proper cases for its employment.

All are pretty well agreed that the hard rays from the x-ray bulb and the gamma rays from radium have practically the same effect upon pathological tissues with this difference, that the gamma rays from radium are more localized in their action and are thus better adapted for use in cavities, sinuses, etc., wherever the radium may be inserted in its container, while the x-ray has a deeper penetration and is of more value in reaching deep-seated growths and outlying areas which are inaccessible to the radium applicator. These rays

\* Read at a meeting of the Brooklyn Gynecological Society, December 7, 1917.

have an action on all living tissue cells whether normal or pathological, which is stimulating up to a certain point causing increased activity and proliferation, but that if pushed beyond this, they cause the cells to swell, then to die, disintegrate and to disappear by phagocytosis and replacement in part by cicatricial tissue. The cells of pathological structures are also more easily acted upon than are the normal cells, so that their lethal dose is considerable less than that which will cause injury to the normal healthy tissue.

There are some who do not realize just what constitutes "deep radiotherapy" and continue to use apparatus entirely inadequate for producing the proper hard ray. Until a better understanding of this prevails and all workers secure the necessary paraphernalia, injuries to the skin will continue to occur and failures be frequent where cure should obtain.

When attempting to do deep "raying," one should remember that the action of the ray at the required depth is far from being as strong as on the surface of the body and that there are three main reasons therefor—distance, tissue-density and the needed screen. In measuring the distance, always measure from center of the target, remembering that the strength of the ray diminishes inversely as the square of the distance, so that if the target were 8 inches from the surface of the skin the strength of the light at a further depth of 4 to  $4\frac{1}{2}$  inches, would be only about one-half if nothing but air intervened. But this is further diminished by the density of the intervening tissues and the use of the screen to cut out those soft rays which are only strong enough to irritate the skin without passing through, so that the ray which ultimately reaches that depth is only about one-fifth of the strength as on the surface of the skin. These factors explain the necessity of generating a ray-beam full of hard rays in order to get a sufficient quantity of a kind which will pass the skin, and the sending of such a beam of hard rays through a number of areas of limited size, centering each beam on the deep tissue it is desired to effect. This beam is not a cylindrical shaft but is cone shaped or diverging, which, though it enters the small area 2 inches square exposed by the opening in the lead plate, the target being 8 inches from the skin, spreads out into an area of about 6 inches square when it reaches a depth of 4 to  $4\frac{1}{2}$  inches. In this way the whole mass is reached with a full therapeutic dose through the several small areas even if the whole surface of the skin overlying the mass may not be touched by the ray. The term "massive-raying" or massive dose of x-ray is somewhat misleading and has caused much unnecessary

fear on the part of those who are not thoroughly acquainted with these methods. One must use a ray massive enough to penetrate to the required depth with a workable dose, with the bulb close enough to eliminate the distance factor and use as many areas as necessary to bring the dose up to the proper proportion of the rays used and for a time long enough to give the lethal dose to the diseased tissue, instead of the weak dose which will only stimulate the growth and proliferation of such tissue. The dose must be given often enough to destroy the last vestige of diseased cells, leaving sufficient intervals between treatments to allow the healthy skin and underlying tissues to fully recuperate from the previous exposure. Therefore the term "massive" is only a relative one and may be compared in its use in deep raying, in contradistinction to the light doses for surface work, with the use of heavy doses of quinine in treating malaria in contrast to the small doses required as an ordinary tonic. The majority of radiologists, in this country at least, are using one of several equally good types of the interrupterless transformers which have a coil shunted into the current for the purpose of modifying the current and making it possible to use the tube for the long exposures necessary for treatment and fluoroscopy. The static machine soon proved to be entirely inadequate to furnish the proper rays for deep work; even the coil generators had their drawbacks. The best types of transformer work equally well with the oil or water cooled Tungsten tubes and with the Coolidge tube. The advantage in using the Coolidge tube is in the steadiness of its action when once it is set at a given degree of vacuum and spark-gap back-up.

Given a proper generating apparatus and a selected case—what is the proper dosage and how often should it be applied?

There is yet a considerable lack of unanimity on these points in the various reports. One mentioned using the static machine without stating the measured dose nor the number of treatments required. Another writer used 2 or 3 milliamperes through the tube, not mentioning any other qualification except the number of treatments required. Another series of cases was presented in which only once was a dose mentioned, that case receiving 1000-X and no mention of the number of treatments nor the size of the dose given each time in order to arrive at that dose, nor whether the 1000-X referred to that amount measured on the surface or at the required depth. It provokes one to read a statement like this—"One patient had been treated by several radiologists without relief and could with difficulty be persuaded to have the ray used again, but by a proper application of the deep ray the case was finally cured;"

no mention being made of the dose nor the number and frequency of treatments. It looks too much like saying—"My method is the proper one, send your cases to me if you want them cured." This is neither ethical nor is it deep therapy as I understand it. Using the weak ray from inadequate apparatus is too much like trying to build a fence with the use of a small tack-hammer for driving the large nails. When reports are made of cases or series of cases, the method of applying the ray should be given in as clear a manner as possible so that a standard may be established for comparison among workers and thus a uniformity in results be obtained. Any cumbersome method of measuring the dose is out of the question. If you have an interrupterless generator like those I have referred to and

- (a) A tube backing up a spark gap of 9 inches;
- (b) Transmitting 10 to 12 milliamperes;
- (c) The target 8 inches distant from the skin;
- (d) The ray showing between 8 and 9 Benoist penetration;
- (e) The ray sent through a 3 millimeter thick aluminum screen;
- (f) The patient protected by a lead plate at least 3 millimeters thick with an opening of 1 or 2 inches square through which the screened ray may pass;
- (g) And applying the ray for six minutes.

Then you have a ray of fairly standard strength, one that if tested by a quantimeter strip should show a tinting called 10-X, in three to three and one-half minutes if the strip and the developer are both fresh. Such a test may be made when installing a new tube to see if it is working properly but is entirely unnecessary to be used every time you give a treatment, neither is it always reliable. The slight variation in the quality of the ray in different tubes is offset by a difference in the sensitiveness of different skins and by a difference in the thickness of the fat layers through which it must pass, so an absolute scientific accuracy in measurement is an impossibility.

The average skin is able to stand double the so-called 10-X erythema dose, but as some skins are oversensitive, I usually begin by raying only five minutes for each area for the first two rayings through that part of the skin, noting the effect and if no irritation is observed after two weeks from the last raying I use six or even seven minutes through each area, diminishing again if any signs of irritation appear other than the deep tanning.

In a case of hemorrhagic uterus of the sclerotic type, or of simple fibroma of small size, the abdomen below the umbilicus is marked off in six or more squares on each side of the median line. The ray



is then given through the small-sized opening in the lead protecting plate, 1 or 1.5 inches square, or if you prefer a circular opening one of that diameter; the ray should be directed through six of the squares on one side centered over the uterus and ovary on that side. The next day repeat the process on the other side. The following day give it through six areas on the back centering on the uterus. In giving the treatments the lead plate is shifted each time so the opening covers a new area of skin, due care being taken to prevent the rayed edges overlapping. A period of two weeks should now elapse in order that the skin may fully recover; then repeat the series so as to give two series between the menstrual epochs. If the patient is forty-five years old or over, two or three series usually produce amenorrhea, but one or possibly two more series should be given, otherwise menstruation may recur. After producing amenorrhea in a fibromatous case, absorption goes on until as a rule the tumor is gone; but if it comes to a standstill the raying can be repeated a few times to finish the case. In large fibromata we have a greater area of skin to use, so the opening may be increased to 2 inches square, the number of treatments depending upon the size of the tumor and the age of the patient as well as the manner in which the patient reacts. There is usually a certain degree of acidosis accompanying the absorption of so large a mass which is readily relieved by sodium bicarbonate, 30 to 40 grains daily. It requires more raying to check hemorrhage in patients who have not yet reached the menopause age, and some say no patients under thirty-seven years of age should be rayed. I have demonstrated the feasibility of using it at any age where the only other alternative to relieve the hemorrhage was a hysterectomy, stopping as soon as the patient skipped two menstrual periods, and thus avoiding a total ovarian destruction as shown by a return of a normal menstruation later. Certainly in these young women the ray should be given a chance to act before condemning them to the sacrifice of their sexual organs. Whether pregnancy will be possible later remains to be demonstrated. In computing the total dosage a case receives, if you will multiply the milliamperage (10), by the number of minutes (6), and again by the number of areas used (6), you will have 360 milliamperere-minutes (M.A.M.) used in one series, then multiplying this by the total number of series used to complete the cure, you will have the total M.A.M. which that case required. If all the workers would do this and follow the technic before referred to, giving it in their reports of each case or series of cases, we could all gage our work the better and correct our faulty technic.

In treating diseased conditions which are brought about by a diseased ductless gland, the ray should be directed so as to reach that gland. Thus in leukemia we apply the rays over the spleen; in exophthalmic goiter, over the thyroid and thymus glands, care being exercised to so direct the ray that a lethal dose will not be given to those all important parathyroid bodies or you will have a similar list of fatalities to those accompanying surgical removal of them; in the sclerotic hemorrhagic uterus, the ovary as well as the uterus must be rayed; in the enlarged prostate gland, the testes as well as the gland.

Dr. A. F. Holding reported 258 cases of malignant disease superficially and deep seated. He secured excellent results in the surface work in the basal cell type of carcinoma, and finds the ray in deep work ameliorates carcinoma of the breast, ovary, testicles and of the lymphatic structures when made up of cells of the embryonal type, and sums up this work by saying—"While we cannot successfully maintain that the ray has yet proved to be a cure for cancer, it is worthy of note that the rays as well as radium applied when removal is possible, produce more uniform results than any other agents heretofore known." He uses the Coolidge tube in all his work set at a vacuum backing up a spark-gap of 10 inches, 7 milliamperes through the tube, three to four minutes in each area, giving a tinting of number 3 Saboreaud pastile or 15 Holzknecht units; sending the ray through a 3 to 5 centimeter diameter opening in the lead plate.

The majority agree that when possible in malignant disease it is best to remove the mass; and that if there is any probability that the disease has passed its local bounds, the x-ray or radium or both should be used before and after operation for removal. In cases where operation is impossible, the ray will often cure the local manifestation thereby prolonging a useful life for several years even though the patient succumbs later from metastatic extension to other organs, and not infrequently effects an absolute cure in an apparently hopeless case.

It is a very good procedure in uterine cancer of the inoperable type to insert radium in the vaginal vault or rectum or in the uterine cavity between the periods of the x-ray treatments.

Sarcoma of the round-cell type is quite amenable to treatment, the spindle-cell variety less so, and that of the mixed type with polymorphous cells proves very refractory and the end results are far from satisfactory.

I have avoided using the terms, "Röntgenology" and "Rönt-

gentherapy" because they have no place in scientific nomenclature; a man by the name of Röntgen merely discovered a ray while experimenting with a Crooks tube, which he termed "x-ray." He never made any further use of his discovery and certainly never used it therapeutically, but left it to others to develop its value.

230 ST. JAMES PLACE.

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## THE USE OF CORPUS LUTEUM EXTRACT HYPODERMICALLY IN CASES OF REPEATED ABORTION WITHOUT DEMONSTRABLE CAUSE.\*

BY

JOHN COOKE HIRST, M. D.,

Philadelphia, Pa.

THE type of case to which this paper refers is the one described in text-books as one of "irritable uterus;" a uterus which will stand distention up to a certain point, usually between three and four months of pregnancy and then expels its contents. In these cases there is apparently nothing to account for the abortion; no displacements of the uterus, no lacerations or erosion of the cervix, Wassermann negative, no pelvic adhesions, and it occurs usually in patients most anxious to have children. There is no bar to conception, which occurs frequently, but the usual sequel is abortion at the third or fourth month.

Several months after I began the use of corpus luteum extract in the treatment of the nausea of pregnancy, a patient of the type described came to see me, just beginning her seventh pregnancy. I had attended her several times before, in abortion about the third month, and had told her the last time that if she became pregnant again, to consult me as early in pregnancy as possible, and I would attempt to find and correct the cause of her repeated miscarriages. I had no clear idea at the time what I proposed to do, as careful examination had disclosed no cause for her repeated miscarriages and I had always ascribed them to an "irritable uterus." When she finally presented herself, it occurred to me that possibly the cause of her miscarriages might be a premature absorption or blighting of the corpus luteum of pregnancy, the relation of which to pregnancy is well known. It seemed possible that if by some failure of mechanism, the corpus luteum of pregnancy did not run its normal course, but was absorbed, that such an occurrence would

\* Read at the meeting of the Philadelphia Obstetrical Society, January 3, 1918.

lead to repeated miscarriage. Based upon this and purely empirically, I gave her hypodermics of corpus luteum extract, intramuscularly, using 1 c.c. of the extract, representing 20 mg. of the dried substance, once daily. Having no guide to the number of doses, I gave her thirty-six in all, continuing them over a period of two months. The administration was reduced gradually, and stopped at the end of two months. This patient had never gone beyond the fourth month and one week of pregnancy; this pregnancy resulted in a living child delivered at term in January, 1917.

The second patient had a similar history, having had five miscarriages, all without demonstrable cause. She had never gone beyond three and one-half months. In her sixth pregnancy, I began the use of corpus luteum extract when she was seven weeks' pregnant. She received thirty-two doses in all, over a period of nine weeks. She also was delivered at term in October, 1917. The third patient had had four miscarriages and, except for the smaller number of pregnancies, her history was in every respect similar to the others. No cause whatever could be found. Corpus luteum extract was begun when she was nine weeks' pregnant. She received thirty-two doses, over a period of nine weeks. She had never gone further than three and one-half months in any of her four preceding pregnancies, but in this one miscarried at five and one-half months, November 27, 1917, again without demonstrable cause.

These cases are rare in the experience of any one physician, as it is not often that close examination will not reveal a possible or probable cause. It is manifestly impossible to prove without operation the correctness of the theory and the case must rest upon the evidence of practical trial. It is for this reason that the few I have had are reported, with the hope that the united experience of physicians meeting such cases can settle the value of a theory which must rely at present on rather slender proof.

I believed that this use of corpus luteum was original, but find that it is merely independent. In Graves' Gynecology there is reference to a case reported by Dannreuther, with the date and place of publication not specified, which gives the successful result of corpus luteum extract in a case similar to the ones described. The extract was given by mouth, however. I know of no other use of the hypodermic extract in such cases, however and am convinced that if it has any value at all, hypodermic administration will prove far more reliable.



## TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF PHILADELPHIA.

*Meeting of January 3, 1918.*

*The President, DR. FRANK C. HAMMOND, in the Chair.*

DR. ALFRED HEINEBERG read a paper entitled

### BLOODLESS REPAIR OF THE CERVIX UTERI.\*

DR. BARTON COOKE HIRST.—I saw Dr. Goodell when I was an interne at the University attempt hemostasis by putting a couple of small skewers through the cervix and a rubber band above them and I recall that the cervical operations were done more conveniently with the aid of this procedure. It was not a satisfactory method however, and no one has adopted it, so far as I know. Dr. Heineberg's method seems to me an excellent one. There is no question that if we can secure hemostasis in doing cervical operations the work will be more precise and accurate.

DR. EDWARD A. SCHUMANN.—I should like to ask Dr. Heineberg why he does not use the ordinary skewer rather than have an elaborate and new instrument made?

DR. HEINEBERG, closing.—Replying to Dr. Schumann, I used skewers made of different lengths. I protected the pointed end by a snap or clamp such as is used to protect a neck-tie pin. I found this did not work satisfactorily, because the instrument had to be put through the cervix at a right angle to the long axis and in order to get high enough up I could not pull the cervix down to a sufficient level in most cases. These forceps can be put on the cervix at any point and at any level.

DR. JOHN COOKE HIRST read a paper entitled

### THE USE OF CORPUS LUTEUM EXTRACT IN THE CASES OF REPEATED ABORTION OCCURRING WITHOUT DEMONSTRABLE CAUSES.†

#### DISCUSSION.

DR. BARTON COOKE HIRST.—The treatment seems logical. All are familiar with the experiments of Loeb and Fraenkel showing that lack of corpus luteum secretion will blight the ovum. It is in line also with what DeLee tried to do in the transplantation of ovarian substance. The treatment seems practical and ought to be given a trial so that collective evidence may be accumulated as soon as possible.

\* For original article see page 652.

† For original article see page 662.

DR. F. HURST MAIER.—The question of endocrine therapy is somewhat empirical in that we have no definite physiology to guide us. It is quite possible that many cases of abortion for which no definite cause can be found may be the result of some variation of the constitution of the corpus luteum. Histological examination of ovaries which have been removed during pregnancy reveal enlargement of the interstitial cells and formation of corpora lutea. The experiments of Loeb, Vincent and others have shown that the corpus luteum has a marked influence upon decidual formation and its nutritional maintenance during early pregnancy. Their work corroborates the early researches of Fraenkel as to the importance of the presence of the corpus luteum during pregnancy. His statement that during early pregnancy the removal of both ovaries causes abortion to take place is, as M'Iloy well says, open to criticism, in view of later researches and observations, more especially with regard to the human female. I have had the personal experience of removing the remaining ovary and tube, the other having been removed several years before, in a woman two months' pregnant without interrupting the gestation. The child is living and well to-day. In view of the fact that the uterine secretion is closely related to the endocrine organs I would suggest the use of thyroid and suprarenal extracts as well as corpus luteum in the treatment of cases of repeated abortions. For the present the endocrine therapy is one of clinical experimentation. As Dr. Hirst has said, we must follow our cases, practically experiment with them, and publish our results.

DR. HIRST, closing.—I have nothing to add except to emphasize the fact that I reported these cases, not as representing a proven theory but, if I may be pardoned a slang expression, as a sort of "hunch" that something might come of the work suggested. The circumstance of the three cases in which pregnancy had not continued longer than four months, two of which went to term and the other one, one and one-half months longer than any previous gestation, shows the idea to be a step in the right direction. I hope experience may prove this to be correct in cases we cannot manage in any other way. The value of the method must be proven by the collective experience of the profession at large.

#### CLINICAL REPORTS.

DR. EDWARD A. SCHUMANN.—I should like to ask the opinion of the Society with regard to cases analogous to one which came under my notice to-day, that of a young woman of twenty-six, the subject of an induced abortion with retained secundines for which she was curetted by me about three months ago. She left the hospital in good condition, the bleeding having stopped. She returned in a month with recurrence of uterine hemorrhage. She was again curetted and the diagnosis of chorioepithelioma made from examination of the scrapings. Two other pathologists confirmed this diagnosis. This occurred in the first part of December; to-day I

removed the uterus by panhysterectomy and upon opening it I found a perfectly smooth endometrium without evidence of chorioepithelioma. It has not, however, been sectioned. There is one small area without endometrium but so indefinite that whether it is a new growth cannot be determined. I am sure no mistake was made in the pathology because this was evident from the slides. The question arises whether the entire tumor was removed by the curet before it had time to penetrate the muscularis, or whether there is an area in the uterine wall which will be disclosed by microscopic examination of sections.

DR. BARTON COOKE HIRST.—I had one case such as Dr. Schumann reports. The woman had all the clinical symptoms justifying the suspicion of chorioepithelioma and I had the specimen removed by the curet submitted to three pathologists. Two stated positively that there was chorioepithelioma; the third was doubtful. Upon being told the opinion of the other two he said he felt like concurring with this and that in view of the preponderance of opinion and his own doubt he thought it a case for hysterectomy. I removed the uterus and had the same experience as Dr. Schumann. There was nothing inside the organ but a small plaque about the size of a 5 cent piece consisting of round cell infiltration. I explored the placental site which on microscopical examination showed also nothing but granular round cell infiltration and some degenerated spindle cells but no trace of chorioepithelioma. I was decidedly chagrined at the result of the operation but in thinking it over it occurred to me that I might have removed the whole of the chorioepithelioma if it had not penetrated the muscularis. I think we shall have to be prepared for that occurrence once in a while. There is no question that when we get indubitable microscopic evidence of chorioepithelioma the uterus ought to be removed. My operations in this condition amount to twelve and this is the only case in which a mistake in diagnosis was demonstrated by examination of the specimens. All the other cases justified the operation.

One peculiar experience I have had might perhaps be borne in mind with advantage. I had under my observation a case in which I felt sure there was chorioepithelioma. The case was under my care for sometime and twice curetted. The scrapings were submitted to Dr. Allen J. Smith who has had large experience in such examinations and a negative report was given. I was so confident, however, that the woman had chorioepithelioma that I operated upon her before the Clinical Congress of Surgeons which met here some years ago. Upon examining the specimen my clinical diagnosis was found to be correct. There was a nest of chorioepithelioma in the uterine muscularis communicating with the uterine cavity by a small orifice less in circumference than a slate pencil. The nest had burrowed deep into the musculature so that we got no evidence from the curet which slipped over the orifice communicating with the growth.

DR. F. HURST MAIER.—Chorioepithelioma is potentially malignant at all times. It cannot be regarded as malignant, however, unless it has invaded the muscularis or deportations to other struc-

tures have taken place. While it is easy to recognize chorioepithelioma it is a very different matter to decide whether it is malignant or not. Its presence in the uterus, with its possibilities of potential malignancy is sufficient justification for the removal of the organ. This fact receives further confirmation when we consider the great variations of malignancy that the growth offers from cases of the most tragic type with extensive metastases and early death to recovery after operation with spontaneous disappearance of the secondary growth.

DR. STEPHEN E. TRACY.—Some years ago I had a patient with a hydatidiform cyst and the uterus was thoroughly cleaned out. A few weeks later, she had a bloody discharge and was sent back to the hospital for a curetment. A clinical diagnosis of chorioepithelioma was made from the material removed from the uterus and the diagnosis was confirmed by histological examination. As the patient was a young woman, and a pan-hysterectomy meant a great sacrifice to her, I submitted the slides for a further opinion to another pathologist. He made a frank diagnosis of chorioepithelioma and requested that he be given half the uterus after the hysterectomy had been performed. I then recommended to the family doctor that the patient have a complete hysterectomy. He was an old gentleman and did not believe especially in operations and felt the patient had had a sufficient amount of surgery. He stated he would treat her with iodine and tampons, and if this did not prove satisfactory, he would send her back for operation. I explained to him that if we delayed operation, she might have a metastatic deposit in some other organ, and that operation would then be too late. He would not, however, consent to the operation. About a year and a half later, she reported to the office because of metrorrhagia. Bimanual examination did not reveal any pelvic lesion and she was sent to the hospital and curetted for diagnostic purposes. Microscopic examination of the material removed showed that she had had an early abortion. I saw the patient about a month ago, which was nearly five years after the first operation, and she was in excellent condition. Had it not been for the family doctor, she would have had a complete hysterectomy, and my experience would have been the same as that of Dr. Schumann's. A number of cases have been reported in which the diagnosis of adenocarcinoma has been made from the curetings in which the uterus after removal showed no evidence of malignancy. Some years ago, Dr. Noble operated upon a patient in whom a diagnosis of adenocarcinoma had been made from the curetings. When the uterus was opened after the hysterectomy, the endometrial cavity was smooth and apparently normal. A large number of sections were made and finally a small nest of malignant cells was found.



## TRANSACTIONS OF THE BROOKLYN GYNECOLOGICAL SOCIETY.

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*Meeting of November 2, 1917.*

*The President, CLARENCE R. HYDE, M. D., in the Chair.*

DR. HERMAN SHANN read a paper on

THE SURGICAL TREATMENT OF CANCER OF THE LARGE INTESTINE.\*

### DISCUSSION.

DR. WILLIAM LINDER.—“I wish to emphasize the importance of caring for the duodenum in operations for cancer of the cecum, ascending colon and hepatic flexure. When this bowel is mobilized, the intraperitoneal portion of the duodenum is exposed and my practice is to place a laparotomy sponge to cover the duodenum. Frequently cases are admitted to the hospital with symptoms simulating acute perforative appendicitis. When the abdomen is opened we find a perforating cancer of the cecum, and when we consider that the contents of the cecum and ascending colon are fluid and that the obstructive symptoms from the neoplasm appear very late, when the patient is admitted to the hospital for an acute condition, she is really suffering from perforating carcinoma with abscess formation. Now the technic we employ in these cases when the abdomen is opened, is to thoroughly mop out the abscess cavity and protect the general peritoneal cavity, the small intestines being pushed aside. We proceed to mobilize the perforated cecum and detach also 6 inches of the terminal portion of the ileum and leave this loop after sewing the mesentery of the two loops together, practically performing the first stage of the Mikulicz operation. These cases are frequently considered inoperable but we have had excellent results, in spite of the presence of enlarged glands, which upon further examination proved to be only inflammatory. The liver in all these cases is first inspected to make sure there is no metastasis. A word about operations upon the splenic flexure. Here we have the most inaccessible portion of the large bowel to deal with. These cases usually come to operation very late, the diagnosis is frequently not made because the tumor is very rarely palpable. In opening the abdomen if you suspect carcinoma do not fail to palpate the splenic flexure, for in quite a few cases where carcinoma was suspected on the right side the lesion was found to be in the splenic flexure. In mobilizing the splenic flexure you want to bear in mind that the descending colon is deeply placed in the abdomen, and has hardly any mesentery. I therefore mobilize not only the splenic flexure but I detach all that portion of the

\* For original article see page 403.

transverse colon from the stomach and in that way I can bring out a good loop for the first stage of the Mikulicz operation. Chronic acquired diverticulitis occurring in the left side of the abdomen is frequently mistaken for carcinoma of the sigmoid. I have come in contact with three or four of these cases recently. Upon careful inspection I found that there was considerable inflammation and thickening of the peritoneal or outer coat of the bowel and no encroachment or involvement in the lumen of the gut, favoring a diagnosis of diverticulitis. One point in this connection must be remembered and that is that some of these cases of chronic and long standing diverticulitis may undergo secondary carcinomatous degeneration. I want to emphasize the importance of a careful palpation of the entire lumen of the large bowel, for occasionally two separate lesions of carcinomatous involvement may be found in distant parts, as I was able to demonstrate only a few days ago where a patient showed a carcinoma of the stomach of the infiltrating variety and a scirrhus carcinoma of the cecum. The importance of this is self-evident: before you undertake a radical operation to make sure there is no lesion elsewhere.

DR. J. O. POLAK.—“We must consider Dr. Shann’s paper from our standpoint and he has brought a point that we must all realize, and that is that none of us must open the abdomen unless we are competent to deal with these diseases of the bowel, particularly of the pelvic colon. I speak of this because of the instances of mistaken diagnosis as to pelvic disease which have turned out to be malignant disease of the sigmoid. I can recall three cases. One in which I found an intestinal tumor, perfectly smooth with no metastasis. It was Dr. Shann’s case and I saw her only a few months ago and she appeared to be a healthy woman. I diagnosed an ovarian cyst but when he operated, disease of the bowel was found and he had to make an end-to-end anastomosis. That same occurrence has happened to me in two other instances where I have made errors in diagnosis and we have had to make end-to-end anastomosis. There are deviations in the location of the sigmoid, complications caused by the various operations in the pelvis, inversion of the uterus, all of which must be considered in the study of these cases. Such a paper as this should be thoroughly discussed. It shows an immense amount of work and is lucid. Everyone here should go away with well-defined ideas of what we should do with these pelvic tumors affecting the colon.

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*Meeting of December 7, 1917.*

*The President, RALPH M. BEACH, M. D., in the Chair.*

DR. O. PAUL HUMPSTONE reported a case of

INTERSTITIAL ECTOPIC PREGNANCY.

“This patient consulted me first a little over a year ago for sterility, giving a history of marriage six years before and having an attack of acute pelvic inflammation directly after marriage, with separation

and divorce on this ground. She remarried one year before consulting me and came to see me for sterility, having no other symptoms. My examination showed a clear cervical mucus, no outward evidence of an old gonorrhea, save inflamed Skene glands. The uterus was fairly firmly fixed, the ovaries were palpable in the culdesac below the irreducibly retroverted uterus. She was operated on at the Methodist Hospital for the sterility. She menstruated regularly after the operation until seven weeks before the acute attack. The last menstrual period was regular as usual. Five weeks later she had a vaginal discharge with brown particles in it which continued for two weeks with some upper abdominal pain. On the morning of the day of admission she was seized with sudden acute abdominal pain and fainted while at stool and rapidly developed symptoms of an acute abdominal lesion with internal hemorrhage. She was taken to the Methodist Hospital where she was operated upon in the tragic state and the operation disclosed an ectopic with rupture and active bleeding. If she had not been operated upon she would have bled to death. The interesting point in the case is the fact that there is always danger of ectopic in a woman who has had pelvic inflammation, and the added danger where an operation is done to cure sterility in such a case. This is the second case I have seen in six weeks. In both there was gonorrhea acquired from the husbands, both were operated upon to cure the sterility and when pregnant both had ectopic, one interstitial, the other in the ampula. The other tube in the first case mentioned was patent. It is a question whether the interference in the tube might be from a kink. The Webster-Baldy operation might produce such a kink, but not a kink beyond the interstitial point of ectopic pregnancy.

DR. JEWETT.—“I think Dr. Humpstone was fortunate to be able to get at the case early and operate early. These cases are of a type that are not safe to allow to wait for recovery from the shock. I feel strongly because of a case that was in the surgical service at the Long Island College Hospital recently. The woman had an abdominal crisis and was in very bad shape for operation, but was referred to the gynecological service. I saw her one-half hour before death. She showed every evidence of hemorrhage and shock and was placed in the Trendelenburg position. She was a thin woman and it was easy to map out the pelvic organs. We could definitely make out the uterus and adnexa. There was no increase in size of either adnexa, no bulging in the cul-de-sac, no blood, no boggy feeling, and we were perfectly sure there was no ectopic and that there was a rupture elsewhere in the upper abdomen. There was no tenderness in the pelvis. Postmortem showed a ruptured interstitial pregnancy, the enlargement being not over one cubic centimeter. The Trendelenburg position had gravitated the blood to the upper abdomen. In such a thin woman I was confident of my findings and it was a surprise to meet the ectopic rupture.”

DR. FREDERICK I. SHOOP read a paper entitled

THE PRESENT STATUS OF DEEP RADIOTHERAPY.\*

\* For original article see page 656.



## TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE

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SECTION ON OBSTETRICS AND GYNECOLOGY.

*Stated Meeting, Held December 27, 1917.*

DR. GEORGE W. KOSMAK, *in the Chair.*

DR. GEORGE L. BRODHEAD reported a case of

### PUERPERAL SEPSIS DUE TO BACILLUS AEROGENOUS CAPSULATUS.

The patient, a native of the United States, thirty years of age, married, was admitted to my service at the Harlem Hospital, November 17, 1917.

The family history was negative. The patient had had the usual diseases of childhood, scarlet fever at five years of age and measles at seven. She had an attack of "la grippe" about one year ago, in which she suffered from sore throat, congestion of the nose, occipital headache and dizziness. She was sick for two weeks, making an uneventful recovery. Aside from the above the patient has been well until two weeks ago, when she had a similar attack, staying in bed until four days ago. Three days before her admission to the hospital she purchased 10 grains of aspirin, 10 grains of quinine and 10 grains of cascara for the slight cold that was still troubling her.

The venereal and surgical history were negative.

Menstruation began at the age of fourteen years, was always regular, appeared every four weeks and lasted four or five days, it was moderate in amount and painless in character. The last menstruation was September 10, 1917, just nine weeks prior to her entrance into the hospital.

Urination had always been regular until the present illness. For two days prior to her admission to the hospital, she had not voided. She had been married ten years, had four children alive and well. The oldest child was eight years and the youngest six months. She had two miscarriages (spontaneous).

The recent illness began three days ago at the time the patient took the 10 grains of aspirin and 10 grains of quinine for her attack of the grippe. Twenty-four hours later she noticed slight bleeding from the vagina. Thursday night, two days prior to her admission, she went to bed feeling perfectly well. At 4.00 A. M. the next morning she called her husband complaining of pain in her throat and abdomen. She attributed the abdominal distress to something she had eaten the day before. At 7.00 A. M., three hours after the onset her husband noticed a change in the color of her face, lips and neck.



As he expressed it "Her face was red, and I thought she looked like a person whose heart was failing." A physician was called who prescribed some codeine and essence of pepsin. At 3.00 P. M. that afternoon her husband noticed that her entire body was copper-colored; this was twelve hours after the onset.

The following morning her condition persisted and her physician advised her to enter the hospital.

The patient denied any instrumentation or operation by the vaginal route. She claimed that no vaginal examination was made prior to her admission.

Her only complaints were a bad taste in her mouth, pain in her throat and weakness.

Physical examination of the patient on admission to the hospital showed a temperature of 102.4° F.; respiration 40, blood pressure, 90 systolic and 60 diastolic.

The woman was a well-nourished, well-developed adult. She was in the dorsal decubitus, dyspneic, with respirations rapid and shallow. She had an anxious, pinched expression, and a peculiar sweetish odor coming from her mouth. She was rational and quiet, answering all questions promptly and intelligently.

A deep copper-bronze "Indian-like" hue of the entire cutaneous surface was present. This color did not appear to be pigmentation in the skin but impressed one as being in the subcutaneous tissues. This discoloration was diffuse and even in intensity all over the body, excepting at the finger tips and lips, which were blue and cyanotic. The color did not disappear on pressure; there were no areas of mottling, and no elevation of the skin.

Examination of the eyes showed the pupils regular, equal and markedly contracted; there were no ocular palsies; both eyes converged well. The palpebral and bulbar conjunctivæ were deeply discolored, being a muddy brown in appearance, resembling a deep jaundice. The examination of the ears was negative. The lips were cyanotic, dry and fissured, and their cutaneous temperature was lower than the cutaneous temperature of the rest of the body. The tongue was dry, heavily coated and fissured; it could be protruded in the median line. There was no atrophy or fibrillation present. The posterior wall of the pharynx was dry, dark blue in color and many petechial hemorrhages were present. Similar hemorrhages were found in the gums and hard palate.

The chest was symmetrical, respiration thoracic in type, the right side expanding more than the left. A few fine crackling râles were heard over the left lung anteriorly, between the first and third ribs. The voice sounds and respiration sounds were somewhat harsher over this area. Percussion and palpitation were negative for the entire chest.

The heart sound at the apex was high pitched, slapping, accentuated and snappy. A presystolic murmur was present, localized within the apex beat. The murmur was not transmitted, only heard over an area about the size of a silver dollar, and was harsh and grating in type. An occasional thrill, palpable over the area where the mur-

mur was heard and systolic in time, was present. The apex beat was not visible; palpable in the fifth interspace, 11 cm. from the mid-sternal line. The heart sounds were strong; every eighth beat was feebler than the rest and at times inaudible.

The abdominal examination was negative except for tenderness which was elicited all over the abdominal wall on superficial or deep palpation, particularly just beneath the costal border on the right side.

The vagina and vulva were negative. The uterus was anteflexed, about the size of a two months' pregnancy, and slightly tender. The cervix was central, thick and soft; the external os was one finger dilated; the internal os was not reached. There was slight tenderness in both fornices, which were shallow. The culdesac was negative.

The extremities were negative with reference to motor disturbances. There was no paralysis or ataxia present; the reflexes were preserved and active. There were marked hyperesthesia and hyperalgesia of all the muscles of the body, particularly the large groups of muscles, as the quadriceps femoris group, the biceps humeris, and the abdominal group. The slightest touch caused the patient to suspend respiration.

The patient was pulseless through her entire stay in the hospital.

The patient was catheterized and 2 ounces of chocolate-colored syrupy fluid obtained, alkaline in reaction and with a specific gravity of 1040; it was cloudy; albumin was present; sugar negative; many red blood cells; few white blood cells; guaiac reaction positive; bile negative.

The blood count showed 3,000,000 red blood cells; 50,000 white blood cells. The differential count showed 90 per cent. polymorphonuclears and 10 per cent. lymphocytes.

The patient was placed on eliminative treatment and cardiac stimulation. The diet consisted of liquids only, given by mouth and per rectum.

At 7.00 P. M., about seven hours after admission and forty hours after the onset, the patient became restless and irrational, tossed about the bed, mumbling in monotone to herself. Her abdomen was markedly distended at this time, pupils unequal and dilated, the left longer than the right. She remained in this state until 8.05, when she died.

*Pathological Findings.*—Dr. Gonzales, Pathologist to the Harlem Hospital, reported as follows:

A smear from the blood taken twenty minutes after death from the right auricle showed gram positive and motile bacilli about 4 microns long, having a light zone about them (probably representing their capsules). These bacilli were arranged in chains of two. About six such chains were present in the above smear. The bacilli had rounded ends and were about  $\frac{1}{2}$  a micron in diameter.

Smears taken from the heart, liver and uterus at autopsy showed the same organism as above described. The smear from the uterus also showed some gram positive staphylococci.

The blood cultures taken when the patient was admitted showed no organisms at all. (These cultures were taken and grown under aerobic conditions.)

Stab cultures of agar agar were made from the liver and heart, under anaerobic conditions, two hours postmortem and incubated for twelve hours. These showed the formation of gas in the culture media which was fragmented and showed gram positive; the bacilli were the same as described above.

*Postmortem Findings.*—The positive postmortem findings are as follows:

The pupils are slightly enlarged, unequal, the left being larger. The sclera is of a yellow-brown color. The skin of the whole body has a distinct copper color. The finger tips, toes and lips are cyanotic. The subcutaneous fat and omental fat have a brownish tinge. The left lung shows a few adhesions. The innominate vein was filled with dark fluid blood containing bubbles of gas. Upon opening the right heart *in situ*, bubbles of gas escaped with fluid blood. The mitral valve was markedly thickened and the leaflets stained a reddish-brown color. The aortic cusps were thickened and the edges were adherent to each other. Fine pin-point vegetations, 1 mm. in diameter were seen along the edges of the valve. The heart muscles were brown and showed areas of degeneration. Two small abscesses, 2 to 3 mm. in diameter were present in the papillary muscles of the left ventricle; these abscesses contained purulent fluid but no gas. The lungs were negative except for several petechial hemorrhagic spots. The liver capsule was smooth and brown in color. The cut surface was the same color. The surface had a cloudy look and swelled out from the capsule. The liver surface tested for iron containing pigment with potassium ferri- and ferrocyanide and hydrochloric acid was negative. The spleen tested for iron pigment was also negative. The retroperitoneal lymph glands were enlarged. The cut surface showed uniform yellowish color. The suprarenal glands were negative. The kidneys were both the same. The capsule stripped easily, leaving a smooth surface which was uniformly almost black. The stellate veins on the surface could not be made out. The cut surface was somewhat firmer than normal. The cortex and medulla could not be distinguished from each other, having a uniform purplish-black color. The bladder was contracted and contained some bloody urine of dark color. The gastrointestinal tract was uniformly distended with gas, congested and of a yellowish-brown color. The uterus was enlarged, soft, and the opened mucous membrane presented a shreddy dark green necrotic appearance. The secundines were still attached to the right side of the uterus; the fetus was not present. The left ovary had a small cyst the size of a hazel-nut, with the distinct color of lutein cells, corpus luteum. The uterine veins showed no thrombosis, except for one small thrombosed vessel on the right.

After the autopsy was completed the parietal peritoneum became raised from the underlying tissues in several places, forming blebs filled with gas.



## DISCUSSION.

DR. HERMANN GRAD said: "This is a very unusual case. Those who have made a study of the bacillus aerogenous capsulatus state that it is not unusual to find this microorganism in the blood during the last hours before death. The bacillus may be found in the intestinal canal, although it does not give rise to any symptoms, but it is never found in the blood except in the last stages before death.

"I have had an experience with this bacillus in a case operated on for pyosalpinx. This patient did not do well from the beginning after the operation and she did not look well. Two days after the operation several blebs appeared on her arm and shortly after blebs were found at the edges of the wound. At the end of forty-eight hours blebs had appeared all over her skin. She lived about six days after the operation. She became septic and the abdomen became distended. The abdomen was reopened and blebs were found all over the peritoneum. In this instance there were no gas bacilli in the blood.

DR. CHARLES S. CASSASA said: "I had occasion to see this case clinically and I have seen two other cases of bacillus aerogenes capsulatus infection at autopsy. The characteristic color was always present. Because of the characteristic color, I suspected a bacillus aerogenes capsulatus infection, though I took into consideration the possibility of an acute Addison's disease or a possible acute silver poisoning, due to the use of silver nitrate in an attempt to procure an abortion. The patient had a leukocytosis and marked anemia. When I saw this patient I recalled the two previous cases and strongly suspected this condition.

"I saw another case about one year ago. This patient gave a distinct history of instrumental interference. She had gone to a physician who had inserted a catheter and twenty-four hours later she developed this characteristic color. At the hospital the catheter was removed and the following morning, thirty-six hours after the insertion of the catheter, she showed the presence of the gas bacillus in the blood. This was just before death. We made five anaerobic cultures all of which were negative. We then made aerobic cultures which were positive and confirmed the diagnosis.

"The important point to remember is the color, which is pathognomonic of gas bacillus infection. The prognosis is very grave and the pain is terrific. I watched in this case for crepitation over the femoral vessels but this patient did not develop it. At autopsy the exudate from the veins was filled with leukocytes and gas bacilli. In this case the uterus was very dark and just a mass of gangrenous tissue, so that one could not tell whether there had been instrumentation or not. The smear from the uterus showed staphylococci, and this agrees with the evidence that goes to show that the aerogenes capsulatus grows better in the presence of another microorganism but finally tends to overgrow and crowd out the original one.

*(To be continued.)*



## BOOK REVIEW.

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### OBSTETRICS.

KIRKE'S HANDBOOK OF PHYSIOLOGY. Revised and Rewritten by CHARLES WILSON GREENE, A. M., PH., D, Professor of Physiology and Pharmacology, University of Missouri, Ninth American Revision. Pp., 790, with 509 illustrations, including many in colors. New York: William Wood and Company, 1917.

The author of a new book is a doubtful benefactor. Good as his intentions may be, errors of omission and of commission are almost always present. Revision of a standard work such as Kirke's Physiology is an undoubted service though the reviser may receive little credit for his care of a foster child. Modern research has afforded ample scope for changes, particularly in the part of the volume dealing with nutrition and growth and the important function of vitamins. The reviser has rewritten many of the discussions and laboratory experiments. The work is thoroughly practical and up-to-date.

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### BRIEF OF CURRENT LITERATURE.

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**Emaciation of Women as a Result of the War.**—Blum (*Le Progrès Médical*, 1918, xlvii, 15) does not refer to women who have actually suffered from lack of nourishment. Such cases are happily rare and not due to insufficient rations but to pressure of duties which causes omission of meals. The author refers to the unmotivated case so-called, in which there is no apparent reason for wasting. Incipient tuberculosis is not included and generally speaking the victims retain both appetite and digestive powers. Having examined many of these women it was learned that the majority were frankly suffering from hyperthyroidism, although Graves' disease as such was the exception. Four types are illustrated by cases. One woman, perfectly healthy before the war, began to suffer after separation from her husband and lost about 20 pounds which was largely regained after resumption of conjugal life. Her appetite had never failed although there was subfebrile temperature, headache and marked nervousness. Hyperthyroidism was suggested by palpitation, slightly enlarged thyroid and hot flashes. The case of the second woman was similar but the thyroid was notably enlarged with exophthalmos and tremor and irregular menstruation. The third woman also showed marked hyperthyroidism of a somewhat different type. The emotional sphere was notably implicated and she presented the glance characteristic of Graves' disease. She had lost nearly 25 pounds. The case of the fourth woman was characterized by even greater wasting. With symptoms of Graves' dis-

ease she nevertheless showed no clear enlargement of the thyroid. Rapid loss of flesh had led to enteroptosis and floating kidney.

On the other hand there were cases which showed only a syndrome of emaciation and tachycardia. The author's plain deduction from the material is that the hyperthyroid complex is a purely secondary manifestation which does not originate in the thyroid but rather in the psyche, due to mental tension and increased worries. No cases are mentioned in single women. The frequency of menstrual irregularities shows the incidental implication of the ovaries. The author obtained symptomatic relief from ovarian and thyroid preparations and permanent benefit from mild hydrotherapy and arsenic.

**Rupture and Inversion of the Uterus**—Brindeau (*Archives mensuelles d'obstetrique et de gynecologie*, 1917, vi, 195) publishes a case of this rare complication of labor. The patient, aged thirty-two, was a para-vii, whose first five labors had been normal. The sixth had been ended by perforation and extraction of the after-coming head 89 hours after the premature rupture of the membranes. During the present gestation she had been well up to 8 days before labor, when she began to suffer from vague abdominal pains. Early on the day of her admission to the clinic she was awakened by a violent epigastric pain and vomited repeatedly. She reached the clinic collapsed. Examination of the os showed that labor had not begun. The results of palpation indicated either a ruptured uterus with escape of fetus or a ruptured tubal pregnancy near term, the latter appearing the more probable. Laparotomy disclosed a fetus among the loops of small intestine from which it was readily extracted. The placenta, prolapsed through the rent, appeared at first sight to be attached to a fleshy tumor which was presently identified as the inverted uterus. Subtotal hysterectomy was performed without difficulty. The peritoneal cavity contained many clots. The treatment of the wounds and convalescence were without complication. The uterus, torn in the lower segment had been completely inverted through the tear, so that the placenta sat obliquely upon the fundus, like an inverted saucer. Rupture had occurred through cicatricial tissue, the result clearly of a preceding laceration which had spared the cervix. Of unusual interest was the discovery that the internal orifice of the cervix had been obliterated; yet this occlusion had not been so thorough as to prevent fecundation. To explain the case it is necessary to suppose that during the sixth or dystocia labor there had been a subperitoneal rupture of the uterus which extended as far as the internal os which had been obliterated during healing. Impregnation had occurred while cicatrization was in progress and before obliteration had been completed. The antepartum contractions had caused a rupture in the cicatrix. The author sought in vain to reduce the inversion in the specimen which became possible only after detachment of the placenta. The condition which had made inversion possible was the inertia of the uterus; for after the detachment of the placenta its tone returned even after extirpation. The author was able to reproduce the inversion although with much difficulty.

# DEPARTMENT OF PEDIATRICS.

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## ORIGINAL COMMUNICATION

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### SAFEGUARDING CHILDREN IN WAR TIME.

RECORD OF A MASS MEETING

HELD AT NEW YORK CITY,

February 25, 1918.

DR. S. JOSEPHINE BAKER, *in the Chair*.

THIS meeting was held under the auspices of the following organizations: Section on Pediatrics of the New York Academy of Medicine, The Women's City Club, The Bureau of Child Hygiene, Department of Health, National Association of Great Britain and Ireland for the Study and Prevention of Infant Mortality, Woman's National Health Association of Ireland, The Women's Municipal League, The Bronx County Medical Society, The Brooklyn Pediatric Society, The Babies' Welfare Association and the Civitas Club.

DR. S. JOSEPHINE BAKER, in opening the meeting, said: No two things seem more dissimilar than war and children; it is exceedingly difficult to realize how close the connection between them really is. The most important thing to be done after training and equipping our fighting men is to look to our second line of defense, the children. Practically all the child welfare work now being done is because of war. On account of the large number of men rejected as unfit for military service at the time of the Boer War, attention was directed to the need of better physical development of the young men of the British Empire and to the means whereby physical defects that unfitted them for military service might be overcome or avoided. In France, child welfare work assumed a place of importance because of the falling birth rate, which interfered with keeping the army up to its standard quota. All Europe has been more or less concerned because of the falling birth rate. According to estimates, this decrease in England is responsible for the loss of 500,000 potential lives. Germany and Hungary also report declining birth rates. All of these countries are making much more extensive efforts toward the preservation of child life than ever before. In the beginning of the war all efforts were centered on the

fighting forces, but after a year or two attention was directed to an increasing infant mortality rate and to a condition of undernourishment among children. All Europe then awoke to the necessity of caring for its children. Although we have not as yet had to face the problem of a declining birth rate it is probable that we will have to meet this problem if the war continues.

It is a fundamental known to every student of public health that the baby is the first to react to whatever economic conditions obtain in a community. Thus far the effect of the war upon children in this country has been largely one due to economic causes. There are to-day in New York City 216,000 children suffering from undernourishment because of the increased price of food and the lack of certain types of food essential to the proper nutrition of children. To meet this problem before it becomes more acute, the Federal Children's Bureau has formulated a program which will be presented to you this evening. There are immediate problems which must be met at once throughout the United States. One of the deficiencies to be met is the lack of proper birth registration. In a number of states there is no accurate birth registration and therefore no accurate statistics. We have a baby mortality which is practically criminal. The baby is always the first to react to unsanitary and unhygienic conditions and therefore the baby death rate is recognized as an index of the health conditions of a community; as the age advances the death rate becomes less and less an indication of sanitary conditions, until the adult death rate is practically of no value as to the sanitary condition of a community.

To be effective child welfare work must be done by groups of people working in their own community. We cannot fail to recognize the importance of this work when we consider that the children of to-day are the men and women of to-morrow who must do the reconstruction work after the war is over. Therefore we must get together early and work as we have never done before to fit the children to perform the great task that lies before them.

In New York City it is not so many years since we had an infant death rate of 144 per thousand living births; last year it was 88 per thousand living births, but we are striving for a still higher goal.

Once in a generation we find a person who does a thing so superlatively well that he gains a standing for all time. We have with us such a man, Dr. Truby King, who has reduced the infant mortality rate of New Zealand from 80 to 50 per thousand living births. He is responsible for the lowest infant mortality rate in the world to-day.



DR. TRUBY KING, of New Zealand, delivered an address on

CHILD WELFARE WORK IN NEW ZEALAND.

"There are several factors that play a prominent part in the reduction of the infant death rate in New Zealand. Women's committees have been organized throughout the country and have gone earnestly to work. There are some 80 of these committees scattered through a population of one and a quarter millions of people. Almost every thing which we have done has been done in America. Our work has been founded on the principles laid down by Professor Roche of Harvard and Dr. Holt of your city. The reason we have been very successful in getting a low death rate in New Zealand is because we have put in practice those principles that are known in America and in the Old World. What we have done is to adapt this knowledge to our own conditions.

"Perhaps the simplest way to bring this subject before you is to tell you briefly how we made a beginning and what we are doing.

"The chief factor that caused us to give our attention to child welfare work was the lamentable inefficiency of the men who were examined for military service. Major General Sir Frederick Maurice pointed out that only 40 men out of 100 were fit for military service and this was not among the general population which includes the maimed, the halt and the blind, but among young men supposed to be most fit. He pointed out that this state of affairs practically amounted to criminal negligence as most of the disabilities and defects which disqualified the men for military service were preventable. The main cause for the existence of these defects was because of the unpreparedness of the women for motherhood and the vast amount of bottle-feeding, which was responsible for poor jaws, poor teeth and all forms of indigestion, respiratory troubles, etc.

"Some two or three years after having had this matter brought to my attention, I happened to spend a year in Japan. There the population is largely agricultural, living on small farms, where the women assisted and lived untrammelled lives. They lived an outdoor life, wore loose clothing, were well-developed and they all nursed their children. History tells you of the military efficiency of the Japanese. In our island my work had been the management of a colony for those affected with mental diseases, and in connection with this I had the administration of a large farm. This involved the study of the best methods of agriculture and stock raising. Every farmer knows that the nursery stage determines the future of his crop and that the early care of his cattle determines

their value during their entire lives. We found that by adding certain substances to the soil we could double our potato crop, and that by certain methods of storage we could preserve our crop without loss. We learned that transplanted trees did not do as well as those that were allowed to continue their growth where they began it. A transplanted oak was more or less stunted because its roots were cut. When a baby is artificially fed we have a parallel case; we have cut the roots so far as its proper nutrition is concerned. Taking the cows we found that we were losing 20 per cent. of our calves because of what is called 'scouring,' or in other words, infantile diarrhea. We found that the kind of care bestowed on a calf made a difference of 100 pounds in its weight by the end of the first six months of its life. After we applied scientific methods to the care of our calves we had no more loss from diarrhea and no tuberculosis or other diseases. If a calf was well cared for the first six months of life it gave no further trouble even though it lived to be a cow twenty years old.

"Since the application of scientific methods worked out so well with our crops and our livestock, it seemed worth while trying with children. In initiating a campaign for the betterment of children, it was evident that attention must first be given to the known requirements of the mother and the child, to the simple laws of health and to nursery hygiene, the simple kind of knowledge that has hitherto been handed down from mother to daughter. Our first step was therefore to secure the services of a nurse who should go about among the mothers giving this instruction. After we had a nurse doing this work about six months, the doctors' wives availed themselves of her advice and it was not long before the women began to realize the value of this kind of service and a women's committee offered to take some of the responsibility of this work off my hands. A committee of women was thus formed representing all grades and classes and all kinds of religious persuasions. In demonstrating the value of proper care for children we employed the illustrations taken from the farm and the dairy, we published articles in all the weekly papers on the care of infants and children and this weekly article has always been kept up. In addition we publish a number of pamphlets, such as 'Baby's First Month,' 'How to Feed and Care for the Baby,' etc. We also established a course of lectures and a hospital for the training of nurses in infant welfare work. Through these various agencies the result which Dr. Baker has described has come about.

"The work was first supported by voluntary contributions, but the Government, recognizing its value, had gradually extended its assistance, until at the present time for every dollar voluntarily contributed, the Government gives five or six dollars. It also furnishes free transportation for the nurses and in many ways gives its help and encouragement without taking away the interest and initiative from the women's committees. Reports are sent to the Government, but the work itself is still carried on through voluntary agencies. We have received and instructed women of social position

and the knowledge then filters down through other classes of society; if one worked with the submerged classes only the knowledge does not work up through better classes of society so readily.

"We have another advantage in this work and that is our equable climate, a climate very similar to that of California. This perhaps makes it easier to get results than it is in a more rigorous climate. While in a climate subject to such variation of temperatures as that of the United States, a little more attention may be required to certain details, but it is not unreasonable to expect equally as good if not better results than we have obtained, because the changing temperatures and the lower temperature is more stimulating and should produce a stronger and more vigorous race, just as the Scandinavians are more vigorous as a race than the Italians. All the factors that have aided us in securing our results were not evolved hastily within the background of the war, but have been a long time in developing; they have grown slowly and deliberately and by working with society from above downward.

"The question may be asked whether it was our duty to give this knowledge to those who were able to pay for it. Our answer is 'Yes.' We have public schools, high schools and universities offering knowledge to the people, why should this knowledge so essential to the welfare of the race not be given to the mother no matter to what class of society she may belong.

"You may ask whether furnishing this knowledge to the people is acceptable to the medical profession. It is well known that the medical profession has always worked for the advancement of preventive medicine even though it cut the ground from under its own feet. It has always been ready to sacrifice itself for the sake of a healthier population.

"New Zealand is only one-thirtieth the size of the United States and one-half the size of France. A comparison of death rates in various cities of the world will show that when the death rate in St. Petersburg was 28, that of Vienna 17, Liverpool 14, New York 13 per thousand population, that of New Zealand was 5.1.

"The spirit of competition is also a factor in securing a low infant mortality rate. Benjamin Brodbent of Huddlesfield, England, realizing that the infant death rate was entirely too high, offered a guinea to every mother whose baby was alive at the end of a year. That year nearly every baby in Huddlesfield lived. This was the result of the better care given these babies, not so much because of the value of the guinea as because the spirit of competition was aroused.

"No less an authority than Socrates aid 'The beginning in everything is most important, and especially when we are dealing with anything young and tender.' My particular problem before I became interested in infant welfare work was the 'study of mental diseases and their prevention. Only one-third of the people who enter an insane asylum ever come out again and many of these are never able to again adapt themselves to a normal life. The only way to diminish insanity is to begin in the cradle. The only way to stop



all vice, crime and disease is to begin in the cradle. I wish to call attention to certain degenerated brain cells showing the condition of the brain cell in certain forms of insanity. There are no arborizations of the brain cells of the hopelessly insane. These arborizations are also lacking in the brain damaged by alcohol or syphilis. When the brain cells are thus damaged by poisons such as alcohol or syphilis they degenerate into a mass of fatty tissue, the individual with such brain cells leads a vegetative life for a short time and goes out. That alcohol and syphilis are poisons causing such results we can make people understand, but the thing that people have not understood is that equally dangerous poisons are generated in the systems of all of us. In order to have a healthy organism we must have healthy action of the lungs and kidneys in order that these poisons may be disposed of. If in addition to defective function of the kidneys and lungs we have superadded sluggishness of the bowels we have poisons produced and absorbed into the blood that have a more deleterious effect on the cells of the body than alcohol or syphilis. The only way to restore the body cells injured by the poisons generated in the body is by purifying the blood, by the cold bath, a rub-down and active exercise in the open air and good plain nourishing food. If these remedies will not restore the cells of the body, nothing will do so. I want to emphasize that it is these poisons in the blood of the mother that cause her to suffer from neuralgia, headache, lassitude, etc., and unfit her to be the mother of a healthy child. When women understand these things and give proper attention to bathing, exercise, proper clothing and proper food and then learn to give the baby proper care, we will have an infant death rate, not of 50 per thousand living births, but we will consider 25 an abnormally high death rate.

"The most rapid period of growth is during the prenatal period and the next most rapid period is during the first two years of life. This is the time *par excellence* for the growth of the brain and nervous system. By the time a child is three or four years of age its brain has attained a growth comparable to that of the remainder of the body at the age of twenty-one years. In the human economy the capacity of the individual is determined during the first few years of life. A child's teeth are determined for him before he is born. The whole future of an individual is determined for him before he is four years of age, just as that of a calf is determined by the time it has reached the age of six months. Nature, however, is often beneficent and has provided that the child shall be safeguarded even at the expense of the mother's health. Then, too, we sometimes see very unpromising babies that turn out well, but these things only serve to emphasize the importance of prenatal care.

"The importance of plenty of pure, cool air cannot be overestimated. The mother and the child should not only have separate beds, but their beds should be so located that there is a stream of fresh air flowing between them. The way to make a bed for a baby is to take an open wicker basket or crib. First place in it a blanket opened up. Inside of this blanket arrange the mattress



and bed clothing. After the baby is placed in the basket fold over it the blanket first placed in the basket and fasten it. In this way you have your baby tucked away so that you can take it to the North Pole, if necessary.

"I wish to show you the picture of our hospital for training nurses, not for keeping babies for any length of time. We keep the babies from twenty-four hours to six weeks, but we find homes for them as soon as we can. We have a separate home for the mothers and we make it as attractive as we can. We frequently have mothers come here and stay because they fail to nurse their babies satisfactorily. We have frequently been able to restore the mother's milk supply after it has been absent for several weeks. We also have various graphic methods of teaching the mothers the relative value of different kinds of food. We instruct them in regard to proper clothing and we are unsparing of our ridicule of any fashion that is injurious to health, even though it be American. We especially condemn the high-heeled shoe. Women doing men's work in the industrial world do it more efficiently in a low-heeled shoe such as men wear. We have been teaching school girls the care of the baby. We first tried it in the hospital with the sick babies, but we concluded that sick and ailing babies were not best calculated to develop a love of motherhood in the young girls. We now keep a few normal babies for the purpose of teaching the young girls how to care for a baby.

"Another matter worthy of attention is that of diet. We read that one hundred years ago people of rank ate plain food. You may remember reading of their eating boiled whole wheat, called 'frumenting,' which required very vigorous chewing. Food that requires chewing is essential for the proper development of the jaws. The Maori race, who were the aborigines of New Zealand, lived on roots and bark and it required a great deal of chewing to extract sufficient nourishment from these substances, but they had perfect teeth even at the age of seventy years. Since they have begun to adopt our pap diet their teeth begin to show deterioration.

"If we would again have a virile and vigorous race we must turn back to simpler and more primitive ways of living. We must live more in the open air and we must cease to live on pap foods and to indulge in sweets.

"In New Zealand we have many open-air schools and we find that the children in these schools develop greater physical strength and mental alertness than those who study indoors.

"By due attention to the matters of hygiene of which I have spoken a delicate woman may become healthy and give birth to healthy children, while even a strong woman cannot disregard them and expect to have vigorous children. These essential things should be taught to every mother. Even the mothers of illegitimate children are taught these things in New Zealand, and they are not considered unworthy the attention of women of high rank. The world to-day is concerned about the falling birth rate; and men and women are shirking the responsibilities of parenthood; we of New Zealand are proud of our fatherhood and our motherhood.

DR. BAKER.—We have much work along the lines indicated by Dr. King ahead of us. We have done much work, but there is still much more to be done. The number of rejects among our drafted men are causing concern. Between 40 and 50 per cent. of our draft army are rejected because of physical defects. It is not possible for us to permit conditions that produce such results to continue and we are going to hear what the Federal Children's Bureau plans to do to promote child welfare and to prevent these defects in the next generation.

Dr. Peixotto is going to show us how to make New York as safe a place for children as New Zealand.

DR. JESSIE PEIXOTTO of the Federal Children's Bureau outlined

THE PLANS FOR CHILDREN'S YEAR. ONE HUNDRED THOUSAND  
CHILDREN MUST BE SAVED IN AMERICA DURING THE SECOND  
YEAR OF OUR WAR.

"War asks of every person in the Nation a feeling of patriotism. It asks of some that they go to the front. These are not slow to grasp this great opportunity for service. Others of us must stay at home with nothing to do but sit and wait, but as a result of what has been planned at Washington there will be work for all of us to do. The Women's National Council on Defense, having been organized, has seemed to have nothing to do but to sit and wait. The Children's Bureau has planned to give it a definite task to perform, and is going to show what is to be done. In the proposed campaign there are four main features: 1. The protection of infants and mothers. 2. The protection of mothers with older children, children approaching adolescence, where the mother is confronted with the problem of providing for such children on an insufficient income and with many other perplexities. 3. We are going to concern ourselves with the children sent to work before they should be sent. 4. We are going to take up the question of providing decent and sufficient recreation for adolescent children. In view of the fact that the Women's Council on National Defense is already organized it has seemed wise to work through that rather than to make any really new departure. The necessity of saving children for the future is evident to us all. We want more children than ever before to be well born, and being born we want them to live. The drive is to begin on April 6th and our slogan is "Save 100,000 Babies to the Nation." Every State has been assigned a certain number of babies as its quota to be saved. There will probably be many complaints because various States will think their assignment is unjust. This is because of a lack of proper birth registration. These complaints will at least direct attention to this lack and may do much to give us an accurate birth registration.

"The Federal Bureau has called upon the women's committees of the Women's Council on National Defense to organize for the work and 5090 such committees are ready for work. Where the women's committees are very large we have asked them to divide into subcommittees, taking different branches of work such as a subcommittee of child hygiene, another on child labor, a committee on recreation, etc. These subcommittees should then coördinate their work. We have

also asked volunteers to help in the clinics and infant welfare stations. Physicians have been invited to give information with reference to conditions that caused a high mortality in infants and to point out how they may be corrected. The local committees are to study the economic side and make suggestions as to how the high cost of living may be met by those of limited means. We hope to get many nurses and doctors who will volunteer to work for from twelve to twenty-four hours a week. We at Washington can only dream the dream and sound the trumpet; it is for the committees in their home town to respond to the call and to make the dream a reality, to do a work in their own home town that will be an act of patriotism almost as helpful as donning a uniform and fighting at the front.

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## TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

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### SECTION ON PEDIATRICS.

*Stated Meeting, Held January 10, 1918.*

DR. HERBERT B. WILCOX, *in the Chair.*

DR. CHARLES HERRMAN read a paper entitled

#### ACUTE INFECTIOUS JAUNDICE IN SIX CHILDREN IN ONE FAMILY.

Two cases of acute infectious jaundice in one family are not uncommon, but I have only been able to find one other instance of six cases in one family, namely, that reported by Rankin in 1894. In the family whose history I wish to report there were nine children. The eldest two, boys eighteen and sixteen years of age, respectively, were not affected. They went to work in the morning before the younger children were out of bed and returned in the evening after they had gone to bed. This lack of contact may account for the fact that they were not infected. The remaining six children ranging in age from twelve to two years, all contracted the disease during the period from October 1st to November 3d. The youngest child, an infant of six months, was not infected, that was it did not have jaundice but it did have a rise in temperature, and a severe catarrh. As the disease might run its course without jaundice, it was possible that this catarrh was of similar origin. The rarity of catarrhal jaundice in young children is probably due to a relative natural immunity such as they enjoy from other infectious diseases.

In these six children the disease followed the usual course, beginning rather suddenly with headache, drowsiness and lassitude; this was followed by a rise in temperature and in some instances by vomiting at the outset. After three or four days the conjunctiva became yellow, the urine dark, and the stools light in color. Examination of the patient at this time showed a distinct enlargement of



the liver; in some an enlargement of the spleen, pain in the epigastrium and in some pain in the legs. In ten days the urine and stools had regained their normal color. The pigmentation of the conjunctiva and the enlargement of the liver persisted for a somewhat longer time. In two of the children after an afebrile period of ten days, there was another rise in temperature which lasted for a few days.

An infectious jaundice is epidemic in New York City every few years. The last epidemic occurred in the latter part of 1912 and the early part of 1913, when the writer reported ninety-eight cases which he had seen during the preceding six years. The periodical appearance of a large number of cases at a certain season of the year indicates that we are dealing with an acute infectious disease. Sporadic cases may occur at any time. The disease may present itself in all grades of severity. The infectious material apparently has a special affinity for the biliary passages in the same sense that the typhoid bacillus has for the follicular structures of the intestine. Indiscretions in diet play no part in the etiology of the disease, it is not even certain that the infectious material enters the body through the digestive tract. The seasonal incidence and the frequent presence of catarrhal symptoms in the upper respiratory tract would point to the nasopharynx as the possible portal of entry of the infectious material.

In addition to the six cases herein reported the writer has seen fifteen others in the present epidemic, all in the Borough of the Bronx. The course of the disease was in all respects similar to that observed in other groups. The fact that six cases occurred in one family and that two cases occurred in each of two other families occupying adjoining apartments would tend to indicate that the disease is mildly communicable.

Epidemics of acute infectious jaundice have frequently occurred in camps. During the Civil War there were 22,509 cases with 161 deaths. A large number of cases occurred in the Franco-Prussian war, the Boer war in South Africa and in the present war in the French and English camps.

In the latter part of 1914 and the beginning of 1915, several Japanese investigators succeeded in finding a specific spirochete, which is present in acute infectious jaundice. To this disease they gave the name *Spirochetosis Icterohemorrhagica*. This name is appropriate for the severe cases, but there is a certain percentage of cases without jaundice and without hemorrhagic tendency. The spirochete is found in the circulating blood only during the first few days of the disease and then only with the greatest difficulty. However, if the blood taken in the early stage is injected intraperitoneally into guinea-pigs they develop the characteristic symptoms of the disease in from four to five days, and die a few days later. The spirochetes can be recovered from the blood and from the liver, and in smaller numbers from the kidneys and suprarenal capsules. A few may be found in the spleen, bone marrow and lymph nodes. In acute infectious jaundice of this type, the spirochetes may be found in the urine during the third week, also in the stools and occasionally in the sputum. In patients and in inoculated animals,



in which the disease is produced, the serum after the second week contains immunizing substances. If this convalescent or immunizing serum is injected into guinea-pigs which have been inoculated before the appearance of the jaundice, the disease does not develop and the spirochetes disappear from the blood shortly after the introduction of the serum.

In epidemics of acute infectious jaundice as we see them in New York City the severity of the disease varies greatly. The majority, however, are mild and except for this fact the disease as we see it varies in no way clinically from that described by Japanese, French, German and English observers. Even in the foreign epidemics there is a great difference in the severity. The English observers give a mortality of 4 to 5 per cent., while the Japanese give a mortality as high as 32 per cent. For this reason it seems not unlikely that in the disease as we see it, we are dealing with a mild form of the same disease, which bears the same relation to spirochetosis icterohemorrhagica that so-called Brill's disease does to typhus fever; or it may represent a group of diseases and may bear the same relation that paratyphoid does to typhoid fever. The absolute proof of this relation will of course depend upon the finding of the specific spirochete in our cases. The Japanese have found this organism in the wild rats of the district in which the disease occurred. In this country Noguchi and recently Jobling have found the same spirochete in the rats of New York City and Nashville, respectively, so the organism is present and the possibility of infection with it is present. Dr. Noguchi consented to examine specimens of urine and feces and to inoculate guinea-pigs with the blood taken from a patient during the first few days of the disease, and with the sediment of centrifuges urine. Unfortunately he was taken sick in the midst of the investigation, but will, no doubt, report later.

#### DISCUSSION.

DR. HENRY KOPLIK said: "I notice that the epidemic of acute infectious jaundice which Dr. West recorded has escaped the observation of the writer of the paper. Just at the moment I recall an instance in which two children in an Italian family had the disease and another instance in which three children in another family were infected. Some are inclined to attribute the severe cases with marked jaundice, gastroenteric symptoms, hemorrhagic tendency, enlarged spleen, etc., and the mild cases to the same organism, but I think the better way to look at it is, that the different types of the disease may be caused by different types of organisms; some may cause the severe cases, the so-called Weil's disease, and another type of organism may cause the cases of a mild infectious type. In the family in which there were three children with the disease, there was a history of their having all partaken of one dish of fish. In the Italian family there was no history that any definite article of food was taken so that it was impossible to decide on the point as to food being an etiological factor in these cases."

DR. CHARLES GILMORE KERLEY said: "I may add another instance of several cases of acute infectious jaundice occurring in one family, in which a mother and four children all had the disease at the same time. None of them was particularly ill; they had some fever, catarrhal symptoms and jaundice and all made good recoveries. It is of interest in connection with this family that they lived in a malarial section and they had all had malaria during the previous summer and they came down together in the fall with acute infectious jaundice of a rather mild type, with some fever and gastroenteric symptoms. This was a rather unusual experience with me and I suppose these cases come under acute infectious jaundice.

DR. ELI LONG asked: "Were there any cats in the family?"

DR. KERLEY: "I think not.

DR. LONG: "I ask this because cats have been known to have rat-bite fever. If the rats are infected with the spirochete, the cats may get the infection from the rats so that it is worth while bearing in mind that the infection may be spread by a cat in certain families."

DR. SIDNEY V. HAAS read a paper entitled.

THE HYPERTONIC INFANT: THE CURATIVE ACTION OF ATROPINE UPON  
CERTAIN OF ITS MANIFESTATIONS.

"The hypertonic infant is a definite clinical entity. It is characterized by hypertonicity of all the skeletal muscles, as shown by the ability to raise the head and grasp objects even in the early days of life and by general spasticity. The hollow viscera show increased activity of their smooth muscle fibers, which expresses itself in the form of spasm involving practically every part of the digestive tube and depending upon the region presents the symptoms of colic, visible peristalsis, vomiting, constipation, or any combination of these. The hypertonic infant presents the symptoms of vagotonia. Food regulation alone does not correct the fault, whereas treatment by the drug atropine is followed by rapid subsidence of the symptoms, the results being so prompt and regular as to constitute specific action. The tolerance for milk which is usually low in these infants is at once materially increased so that a normal amount may be utilized. In the teaching of infant feeding stress has been laid upon two factors, the food and the infant. The food has been studied from many angles, with the result that there is available an ample and satisfactory variety adaptable to most cases. The infant has been studied too from many angles, but few serious attempts have been made to study the possibility of altering the infant's reaction toward food, when it is found impossible to adapt the food to it. Personal experience during the past few years has convinced me that in this direction lies a field which is full of promise.

"To make clear the course of reasoning that has led to this conclusion, it is necessary to review a few points regarding the vegetative nervous system and its action. The vegetative nervous system is

divided into the sympathetic and autonomic. The sympathetic reacts to small amounts of adrenalin. The autonomic nervous system is all that portion not included in the sympathetic, including the vagus, and reacts to very small amounts of acetyl-choline. Under normal conditions these systems, the sympathetic and autonomic, are in equilibrium, producing a tonic enervation of smooth muscles. Stimulation of one or the other system by hormones or other factors may produce contraction and spasm or paralysis. Vagal stimulation for instance, may cause turbulent gastric peristalsis which readily changes into retrograde peristalsis and may manifest itself in vomiting. Hence the benefit upon cardiospasm and pylorospasm of atropine. Owing to the close relation of the glands of internal secretion, the autonomic nervous system doubtless has a marked influence not only upon the pancreas and the thyroid glands, but also upon the entire mechanism of metabolism.

"A number of apparently normal healthy infants fed upon the breast take their food with seeming satisfaction, grow and increase in weight, but are unhappy and restless, cry more or less constantly and sleep only at intervals for short periods of time, vomit and are constipated. A much larger number of artificially fed children react in this abnormal manner and present this same picture. The cause of this state is to be sought in the manner in which the individual child reacts to its food. These cases are fairly common and extremely intractable unless treated in the manner to be described. In this group are to be found the colicky baby, the sleepless baby, the restless baby, the irritable baby which does not prosper on any food, although there is neither gastric nor intestinal indigestion, the baby suffering from pylorospasm accompanied by vomiting, usually projectile in type and the constipated baby. Without exception these infants are of the spasmophilic diathesis and usually have a neurotic ancestry. Usual therapeutic procedures and rearrangement of the diet are inadequate to relieve the symptoms. The typical history of these cases is about as follows: The infant is born at full-term, entirely normal, fed at the breast, cries more than it should during the early days of life and is supposed to be having a great deal of colic. Beginning at once or after several weeks, vomiting ensues, which is not related to the taking of food and may occur after each nursing period or only once or twice in twenty-four hours. The vomiting is characterized by its irregularity. These cases pass from hand to hand, changes are made in the formula and method of feeding, but usually without much result. The diagnosis where propulsive vomiting exists is pylorospasm and this is correct, but where the propulsive vomiting does not exist the diagnosis is not made. These infants without exception are hypertonic.

"Correct therapy in these cases shows results which are unusual in their regularity and in the rapidity with which they occur. Where indigestion exists this, of course, must be improved by appropriate methods of feeding, as a rule, however, there is no indiges-



tion and no change in diet is necessary. By the administration of atropine in sufficient doses, the entire picture changes in from forty-eight to seventy-two hours, in some cases even in twenty-four hours.

"The method of exhibiting the atropine is in 1 : 1000 solution, beginning with 1 drop in each bottle of food and increasing it in forty-eight hours if there is no improvement, to 2 drops in each bottle and later to 3 or 4 drops if necessary. An interval of forty-eight hours is allowed between changes in dosage. If the diagnosis is correct it will be found that the atropine controls the frequency of the vomiting, the child begins to sleep very much better and for longer periods, is more comfortable in its waking moments and cries less or not at all. There have been no ill effects noticed from these large doses of atropine in infants. If atropine is used early and in sufficient dosage the number of cases of pylorospasm which finally reach the operating table as cases of hypertrophic pyloric stenosis will be reduced to an unimportant minimum. It is not to be supposed that all infants who vomit, or cry or do not sleep or are constipated will respond to this treatment. On the contrary, if the cause is elsewhere than in the autonomic nervous system there will be no result from this treatment. Atropine administered in full doses will definitely establish the diagnosis. The maximum dose of atropine used in twenty-four hours was  $\frac{1}{15}$  of a grain; the maximum dose administered in a single dose was  $\frac{1}{16}$  of a grain. Where the mother misunderstood the directions and gave a teaspoonful of 1 : 1000 solution instead of 1 drop there were no ill effects. The earliest symptoms of the physiological effects of atropine in infants is a flushing, which gives them the appearance of having fever (this sometimes actually exists, but is usually not high) dilatation of the pupils and slight puffiness of the lids. In two institutional infants not belonging to this group, atropine in doses of 1 to 2 drops of 1 : 1000 solution after several doses produced hyperpyrexia, abdominal distention, flushing, restlessness, vomiting and diarrhea.

"A series of typical cases belonging to this group of hypertonic infants was reported in detail in which the atropine relieved the condition immediately and apparently increased the infant's tolerance for milk."

#### DISCUSSION.

DR. KOPLIK said: "I was struck by the fact brought out in the paper that pylorospasm and pyloric stenosis may be relieved by atropine. Now we all know that there are many cases of pylorospasm which are relieved by atropine, or by other methods of treatment. There are some cases of pyloric stenosis and spasm absolutely cured by a variety of drugs and by a variety of lines of treatment if one can persist in the treatment until the child improves, but there are cases in which operation is indicated, and which I doubt if anything but an operation will help, and in which at operation much thickening of the pylorus is found indicating that



nothing but an operation would have been effective. We all know that pylorospasm may be relieved by atropine but how anatomical stenosis can be relieved by atropine it is difficult to see.

"There are cases in which the treatment brought forward should be used. I know of one case in which operation was advised but the family was much opposed to an operation, although the child evidently had pylorospasm and pyloric stenosis. In this case there were all the classical symptoms and yet the child recovered by medical means. I recall one child that had pneumonia and received full doses of atropine,  $\frac{1}{300}$  of a grain hyperdermically. The child became flushed and showed all the symptoms characteristic of the action of atropine. The convulsions which the child was having continued, however, for over three-quarters of an hour while the child was under the full sway of the atropine. I believe that in some cases we will not get the action of atropine so brilliantly as has been pointed out this evening. As Dr. Kerley has said I have never used it in the group of cases described and I do not think we will find it a *sine qua non* in cases in which the metabolism and physiological functions are disturbed. That is an idea I wish to combat. We should be careful not to think that we have one drug that will gloss over many cases and I should feel very sorry to see sidetracked those well-known principles of feeding which we apply in feeding children who formerly we could not help on account of our lack of intimate knowledge of the fundamental principles of infant feeding.

DR. KERLEY said: "I am hardly prepared to discuss the use of atropine in this class of patients as I have never employed this measure for the cases that Dr. Haas has described. I am very glad, however, to have heard the results of Dr. Haas' observations. I would like to know how he diagnoses pylorospasm and whether he had any cases that might have been diagnosed as pylorospasm and later turned out to be pyloric stenosis.

"It seems that in this series of cases all recovered. One can take up a series of cases and use a familiar line of treatment and all of the cases will get well by some fortunate chance; it is always an advantage to include in reports those that do not do so well. This presentation, however, seems to supply a means of apparent value in treating very difficult feeding cases.

DR. GODFREY R. PISEK said: "We all recognize the hypertrophic infant and we all recognize that Dr. Haas has been feeding a type of infants in which attempts have been made to adapt them to many different formulæ. The child cries, vomits, has increased peristalsis and all the train of symptoms that had been described as a result of the many types of feeding that have been forced upon it. If one takes a series of cases of the same type as these that have had atropine and adjusts the food in the way he has been accustomed to doing, the children would gain in weight and we would have the same type of a chart as has been shown tonight. I should be very sorry if from the meeting tonight there should go forth a note to the effect that feeding was not so important and that by giving atropine these children could be carried on with a certain measure

of success. Certain children react very badly to atropine; I have seen them react with high temperature, flushing, dilated pupils and gastrointestinal symptoms. There would be great danger that the drug might come to be used in dispensary practice and that the dosage might be increased beyond the limit of safety.

DR. HERMAN SCHWARTZ said: "I am sorry Dr. Haas did not continue the same feeding absolutely in his series of cases and just add the atropine and then he would have proved his case. It is not an uncommon occurrence in babies that are vomiting a great deal that they are not given enough food and I noticed that in most of his cases he increased the amount of food and gave the babies considerable more; in other words he gave them what a normal child would have had. Although the cases were hypertonic infants a great deal of their crying and restlessness was due to hunger. The doctors who had attempted to treat them had reduced the amount of food they were getting and when Dr. Haas came along he increased it to the proper amount. The child might continue to vomit, but a larger amount of food would remain in the stomach than when it was receiving less and as a result the child would gain in weight. If he had made no change except in the amount of food given in twenty-four hours or if he had given only atropine and made no change in the food he would have proved something more definite.

"As to the effect of atropine in pyloric stenosis, I have tried papaverine, and in three cases atropine, and there was no result that could be attributed to the atropine.

DR. THOMAS S. SOUTHWORTH said: "It is time that somebody came to the aid of atropine. I wish to say that I have used atropine and have found it a distinct adjuvant in certain cases of vomiting. It is true also that I prided myself that the good results obtained were partly due to manipulation and adjustment of the diet to what I considered proper feeding. Nevertheless it seems to me that we do have a certain amount of irritation and spasm of the pylorus in which atropine may be a definite aid.

"I think that the reason there has been criticism is that in making his presentation Dr. Haas has appeared to lay stress on the weight curve of the charts, whereas as he clearly stated the cessation of vomiting, irritability and constipation, were more eclatant than the mere gain in weight.

DR. WARD B. HOAG said: "I have had an experience with atropine in the case of a first and only child of a woman forty-three years of age. This woman had never had any responsibility either before or after marriage and she refused to nurse her baby. The baby was put on a milk formula the composition of which I do not know. When the baby was four or five weeks old it was put on a malted milk mixture. Peristalsis was slow but with some urging a bowel movement was brought about. The principal difficulty was vomiting and a constant and persistent crying. At the age of three or four months the baby was getting 24 or 25 ounces of a low-fat skim milk mixture. Without making any change in the formula but simply adding atropine, at first 1 drop in a bottle and then working it up to 2

drops, this baby was brought to be fairly good, and the vomiting ceased. I cannot attribute the marked change in this baby to anything but to the atropine. I hear from the nurse of the child every two or three weeks; she called me up within a week and tells me that the baby who is now nine months old, weighs 18 or 19 pounds, and is still a good baby and doing nicely.

DR. CHARLES HERRMAN said: "In a large percentage of cases of pyloric spasm, the infants were at the breast. A certain number of these were rapidly improved by the administration of atropine, without any change in the feeding, so that the decrease in the amount of vomiting may be ascribed solely to the use of atropine. Dr. Haas surely did not mean that atropine was to be used in all difficult cases of feeding; but only in a certain group of cases, which represented a definite clinical entity. Not all of these, however, reacted favorably to the administration of atropine.

DR. ELI LONG said: "How do you know it was the atropine that produced the results? What is the physiological action of atropine in these cases?

DR. HAAS, in closing, said: "It is not intended that atropine is to be used in difficult feeding cases; it is absolutely of no use unless the case belongs to this group of hypertonic infants. From my study, it seems that the condition is dependent upon a disturbance of the vegetative nervous system and that this group of cases is due to irritation of the so-called autonomic portion of the system, as represented by the vagus nerve endings and is not helped by any method of feeding. This treatment is not intended to cure difficult feeding cases, but if you will try it in cases of irritability and vomiting, you will find that it will cure some of these cases. After experience with several of these cases thereafter you will recognize them at once and will know that they belong to the hypertonic group."

Dr. Long has asked regarding the physiological action of atropine in these cases, and the physiology of the vegetative nervous system. This is in a very confused state. Hess and Eppinger who have done more than any others to clarify the situation, in a clinical way are very uncertain. In a practical way it may be said that that portion of the vegetative system which arises from the bulbosacral portion of the chain controls the unstriated muscles of the digestive tube chiefly.

The sympathetic, that portion arising from the thoracic-lumbar region controls chiefly the fine blood-vessels, especially of the body surface. Certain drugs affect one portion, and certain drugs affect the other. Atropine has been shown to influence the action of the autonomic nervous system by paralyzing the vagus endings in the intestinal walls. But as I have said, the subject is in a rather confused state and that is why I did not go more thoroughly into it, but simply called attention to the fact that it was dependent upon a disturbance of balance between the sympathetic and autonomic nervous systems. It is also to be observed that these nerves control the secretion of certain glands as the pancreatic, the adrenals, etc.



and thereby influence metabolism. By abstracting calcium from cats, it has been found that the threshold of reaction of the sympathetic and autonomic nervous system is lowered to the drugs which ordinarily affect them.

Dr. Hoag has answered Dr. Schwartz's question very well. But further proof that the food, when a change was made, and this was not always the case, was not responsible for the good result, is to be found in this; that after giving atropine for a time, an attempt is made to stop it. In some cases the child gets along without it, but in almost every case repeated attempts were made during the course of months to stop it, but with immediate recurrence of symptoms, until a time arrived when apparently the drug became unnecessary.

In regard to the use of atropine, of course, care should be taken. One of the cases of hyperpyrexia referred to in the paper, had an otitis media. This child had convulsions once after atropine but only once, in every other experiment only the hyperpyrexia and other symptoms and so I did not feel justified in ascribing it to the atropine.

Then it might be recalled that one baby by accident received a dram of 1 to 1000 solution of atropine, without any harm. Some children after the administration of atropine get a rise in temperature but it is usually very little. Eppinger and Hess believe that the reason better results are not obtained from the use of atropine is because of insufficient dosage. We have been giving  $\frac{1}{10}$  of a grain a day, without the deleterious results that have been spoken of. In a very large number of cases in which I have used this drug in infancy, only the two cases cited gave severe symptoms.

I do not mean to say that atropine is the only drug that will do the things which I have described, I believe that after investigation, it will be shown that there are several drugs which will have an effect, not only in this group but in other groups as well.

Regarding the operative cases, in several cases in which operation was advised, for pylorospasm. The cases were relieved by atropine.

I have had no opportunity of using this treatment in true pyloric stenosis. But unless the case was still in good condition, where a delay of several days in operating was unimportant, its use would be unjustifiable, in view of the excellent operative results.

The way in which I sifted out the cases belonging to this group was that if there was no improvement after the administration of atropine, I concluded that they did not belong to this group, such as cases in which there was just vomiting, or just constipation.

I believe it is possible to work out the etiology of pyloric stenosis upon the basis which has been discussed, and I shall attempt to do so.

DR. SIDNEY YANKAUER read a paper on

#### OBSCURE FOREIGN BODIES IN THE BRONCHI AND ESOPHAGUS.

The diagnosis of a foreign body presenting the typical symptoms is easy and simple, but if any one or more of the symptoms be absent the diagnosis becomes obscure and difficult. The classical symptoms for the diagnosis of a foreign body are: (1) The history of the inhala-



tion or the swallowing of the object. (2) The physical signs, clinical course and symptoms. (3) The radiographic picture. (4) The bronchoscopic examination. The history of the inhalation or swallowing of a foreign body may be very indefinite or entirely absent. In such cases the object may be discovered by radiograph, but only if the foreign body is one which throws a distinct shadow on the plate. Even when the radiograph does not show the foreign body it may nevertheless be of value in the diagnosis. For instance, a boy five years of age, with the physical signs and clinical symptoms of a persistent consolidation in the left lower lobe, was aspirated and as pus was withdrawn a diagnosis of empyema was made. But the radiograph showed a shadow which was concentrated at the hilus, but toward the periphery of the chest clear lung tissue was found as far as the diaphragm. The diagnosis of probable lung abscess was made. Bronchoscopy was done as a matter of routine, and also because of the knowledge gained by previous experience, that these cases in children are not infrequently caused by foreign bodies. Two pieces of peanut kernel were removed from the bronchus, and the dilated cavities were subsequently repeatedly irrigated with 5 ounces of normal saline solution, with apparently complete recovery at the present time although the case is still under treatment.

On the other hand when the history is absent and the foreign body is of such a nature that it does not throw a radiographic shadow, the radiograph may be confusing. An interesting case came under my observation recently. This child, two years of age was sent to my office with the statement that for four weeks since an attack of tonsillitis the child had been worse. There was no history of diphtheria, the cultures were negative, and no intubation had been done. Direct examination of the larynx disclosed the presence of a foreign body just below the vocal cords. It looked like a flat disc of brass. Upon attempting to remove it it was found to be wedged in so tightly that it could not be displaced up or down. The attempt at removal caused an increased difficulty in breathing, which became so marked that an emergency tracheotomy had to be done. I then decided to wait until a radiograph could be taken. Even though the foreign body looked like a piece of brass the radiograph failed to show it in the trachea, and a direct laryngoscopy showed that the foreign body had disappeared. It had disappeared from the trachea; there was no shadow of it in the neck, the chest, or the abdomen and it had not passed with the stool. A bronchoscopy was then done, which showed the foreign body in the right bronchus. It was no longer brassy but looked black. It was easily removed and upon examination proved to be a piece of glass from the edge of a tumbler, the edge of which was gilded.

When the history of inhalation is absent and the radiograph shows no foreign body the diagnosis may sometimes be made from the course of the disease or from the physical signs. The auscultatory signs caused by a foreign body vary with the size and shape of the foreign body, with the degree of fixation in the bronchus, and with the amount of obstruction which it causes. A foreign body may

be loose in the trachea, and with each respiration may be shuttled back and forth, striking the subglottic space in expiration and the bifurcation of the trachea or the bottom of the right bronchus in inspiration. The irritation caused by such a foreign body would, of course, produce bronchitis. If the foreign body is practically fixed anywhere within the bronchial trees, so that it will move with the respiratory air current, a sound will be produced which has been likened to the vibration of a Jew's harp.

On the other hand if the body is immovably impacted the physical signs depend upon the amount of obstruction. If the obstruction to respiration is complete atelectasis of the distal part of the lung takes place very rapidly, and soon the physical signs of the subsequent pneumonia are clear. In these cases as well as in the non-obstructive foreign bodies which have remained in the bronchus for a long time and obstruction has been caused by the swelling of the mucosa, the bronchus and all its distal branches become filled with pus, and the subsequent course of the case is that of a lung abscess.

It has happened that a patient has retained a foreign body in a bronchus for a long time, but such cases are rare, for, as a rule, the presence of a foreign body sets up a profound reaction.

The bronchitis which is set up in the early stages, soon after the inhalation of a foreign body, is apt to be equally pronounced on both sides, and it may be difficult to tell by the physical signs on which side the foreign body is located. This is because immediately after the accident the foreign body is apt to be movable within the bronchial tree and to be moved back and forth during the respiratory movements.

It is important for the physician to recognize the tracheitis which occurs shortly after the inhalation of a foreign body, especially in children. This tracheitis may be limited to the subglottic region, or it may extend down as far as the bifurcation. The secretion which is formed on the surface of the edematous mucous membrane is thick and tenacious, and causes considerable respiratory obstruction, sufficient sometimes to cause death. This tracheal edema may be recognized by the peculiar stridulous breathing, which is heard in both inspiration and expiration, and which differs from the stridulous breathing of croup by the fact that the voice of the child has a clear and distinct tone even though the edema may be marked enough to cause considerable dyspnea and cyanosis.

With the recognition that foreign bodies may occur without history, an increasing number of cases have been referred to me in which the presence of the foreign body was suspected, and in which the bronchoscope verified the suspicion. It rarely occurs that a foreign body is present in the bronchus and is not disclosed by the bronchoscopic examination in the hands of an expert. Failure to find the object with the bronchoscope will occur only when the body is so small that it has penetrated into branches too small to be penetrated by the bronchoscope. It is usually possible to recognize and look into bronchi of the fourth order, bronchi as small as two milli-

meters in diameter, but the interior of these small bronchi can be seen only in those branches which can be brought in line with the bronchoscope. Foreign bodies which had been present for a long time and which have become encysted may also be beyond bronchoscopic visibility.

Before closing I would like to say a word about prophylaxis. You who are pediatricists should give special attention to this subject. Mothers should be taught that nothing small enough to be swallowed should be placed in the child's hands; that objects which can be easily broken, pieces of which can be swallowed should be kept from children, that instruments used upon children by parents, nurses, physicians, as sprays, syringes, etc., should have no loose parts or breakable ends and that children and perhaps adults should be warned against holding objects of any kind in the mouth.

Perhaps something else can be done to prevent inhalation and the swallowing of foreign bodies. The mouth and throat reflexes of children are exceedingly active and sensitive. This high degree of sensitiveness might be lessened by teaching the child from earliest infancy to open the mouth upon demand, to permit the introduction of a spoon, and to permit the examination of the throat. Such training would have many uses other than diminishing the number of foreign bodies that would be inhaled. Children could thus be taught to permit the use of tongue depressor, to allow their throats to be examined without struggle. This would permit a more frequent and more thorough examination of the child's throat, which would be a distinct advantage.

DR. ROBERT W. GOVER read a paper entitled

DIRECT LARYNGOSCOPY IN ONE HUNDRED AND EIGHTY-NINE CASES OF CROUP.

"The desire for a more accurate means of diagnosis in croup led to the adoption at the Willard Parker Hospital during the past year of the almost routine examination by means of the laryngeal speculum. It was felt that many of the croup cases were not diphtheria, but only catarrhal laryngitis.

"During the past year something over 200 cases were examined; this report is based on 189 of these. The cases examined were not selected ones.

"No endeavor is made in this report to discuss the general diagnosis and treatment of diphtheria.

"Of the 189 cases, 112 had membranes visible in the larynx while in twenty-seven there was none. While the degree of croup was more frequently severe in the membrane cases, yet in more than one-fourth of the membrane cases, the croup symptoms were mild, while in one-sixth of the group of cases not showing membrane the symptoms were severe. One is inclined to believe that many of these mild cases get well without diagnosis or treatment. The duration of the croup was slightly longer in the membrane than in the nonmembrane cases.



"The average age and duration of illness before admission were about the same in both groups of cases. The temperature and its duration were about the same in each series.

"Of the 112 membrane cases 36 were subsequently intubated, while of the 77 not showing membrane, 1 was subsequently intubated, and slight ulceration in these cases made it appear that membrane had been present. The location of the membrane is interesting from the fact that obstruction to breathing is nearly always caused by membrane below the cords or edema following membrane in this location. Of these cases 26 had membrane above the cords only, while 66 had membrane above and below. Membrane was noted on the epiglottis only five times.

"Membrane in the larynx seems to be much thinner and less firmly attached than when it is located in the nose or fauces. It is frequently loose and flapping with respiration, even before antitoxin could have any effect. In this series 46 had loose membrane. Many of these cases had only mild stenotic symptoms so that loose membrane is not due to respiratory effort in all cases.

"In 29 cases membrane was removed from the larynx with forceps and in 23 there was marked relief, although in only 14 was the relief permanent. No effort was made to remove membrane except where it was quite loose. The size of the pieces removed varied from 1 to 2 centimeters square, while in a few cases whole casts of the larynx were removed. After the removal of loose membrane there was no bleeding in most cases. Only slight ulceration was apparent at the site. There seemed, however, to be a slight tendency toward edema in the cricoid region after the membrane had been removed. Sixty-three of the 112 membrane cases had appreciable stenosis, while it was present in only 11 of the 77 non-membrane series, the latter being due to subglottic swelling.

"The older text-books attached much importance to the presence or absence of membrane in the fauces in the diagnosis of laryngeal diphtheria. In this series this has proved only partly true, as in 112 cases of laryngeal membrane 59 had membrane in the fauces, leaving nearly one-half with membrane in the larynx and none in the fauces. On the other hand one would feel quite justified in diagnosing laryngeal diphtheria in a croup case with exudate in the fauces. In this series of 77 cases with no membrane in the larynx 20 had membrane in the fauces. This would not influence the treatment in regard to antitoxin, but would in regard to intubation. In 53 cases cultures were taken from the larynx and seemed to be as dependable as those taken from the larynx in the ordinary cases. Of those with membrane 20 were positive and 8 were negative, while those without membrane 13 were negative and 6 positive. Of the 6 positive culture cases 5 showed membrane in the fauces. The mortality from all causes of the 112 membrane cases was 22, while that of the 77 nonmembrane cases was 5. The mortality of the 36 intubated cases was 11. The one intubated case of the nonmembrane group died. The cause of death in the 5 nonmembrane cases was faucial diphtheria and bronchopneumonia in two,



bronchopneumonia in two, measles and bronchopneumonia in one. The mortality was about twice as high as for the cases with membrane in the larynx and fauces as it was for those with membrane in the larynx alone.

"The examination is devoid of harm, in fact the child breathes as well or better after the larynx has been picked up than before. The examination was made in most instances with the aid of one nurse and a mummy dressing. The Johnson position was used in preference to the Boyce position as it required less skilled assistance.

"The advantage to be gained by direct laryngoscopic examinations are: 1. In deciding as to the administration of antitoxin in a case of croup that presents no membrane in the fauces. 2. In deciding the necessity for establishing quarantine, and immunizing or Shick testing contacts. 3. In avoiding mistaking a foreign body in the larynx for croup. 4. In deciding as to the necessity for intubation; one may with safety wait for much more marked symptoms of obstruction in a catarrhal croup than in one of the membranous type. 5. The occasional removal of large pieces of membrane with permanent relief.

"In the writer's opinion and that of his coworkers there is no other method nearly so accurate in the diagnosis of laryngeal diphtheria as the direct laryngoscopic examination.

DR. HENRY LOUNDES LYNNAH said: "I always appreciate listening to Dr. Yankauer and learn a great deal from him. His classification is good and he is right in placing importance on the history. It is a good plan always to listen to the history given by the parents and to have a laryngoscopical and a bronchoscopical examination.

"I have had several cases of suspected laryngeal diphtheria, such as Dr. Gover has mentioned, in which a direct laryngoscopical examination was made and a foreign body found, in one instance a safety pin, in another a piece of meat and in a third some orange pulp. I had one interesting case in which the child had a history of having swallowed a button and the x-ray plates apparently showed the presence of a button. The child vomited and it was found that the object which was supposed to be a button was a mass of casein. Such a case places the physician in a rather embarrassing position, when after having shown the presence of a foreign body on the x-ray plate he is unable to produce that body.

"So far as the bronchiectasic bronchitis is concerned when this is caused by the presence of a foreign body there is a peculiar inspiratory and expiratory dyspnea, a definite wheeze like that of an old asthmatic. If the membrane is located below the tube one gets this asthmatic wheezing and if the membrane is slightly loosened it acts like a valve and blocks the expiratory air off and as a result it backs up in the lung and balloons it and compresses the heart. Hence I believe Dr. Yankauer is correct when he says that many cases in which a foreign body is present get by us as pneumonia or bronchopneumonia which if we had studied more carefully we would find to be suffering from having inhaled a foreign body into a bronchus. There have been one or two cases reported in which the foreign body

has ulcerated through into the esophagus, producing a fistula; in other cases, the presence of a foreign body has led to the diagnosis of tuberculosis and the subject has been sent to a sanatorium and perhaps the diagnosis only cleared up when the foreign body was coughed up. Thus it may be seen that the points brought out this evening should be taken into consideration; we must always listen to the history of the case first and to the breathing next. Since we can now wash out a lung abscess cavity it is not as serious to have a lung abscess as formerly; many cases by constant washing can be cured.

"Another matter that has impressed me is the danger attendant upon the efforts of parents and friends to remove a foreign body from a child's bronchus or esophagus. I saw one case in which the tonsil was completely enucleated by a parent trying to remove a pin from a child's throat. This child, as a result of the interference, became septic and had quite a serious time, though ultimately recovering.

"As regards Dr. Gover's cases I think he has demonstrated that direct laryngoscopy is a thing all should do, both the pediatrician and the general practitioner, if called to see a case suffering from dyspnea for which there seems to be no definite cause. Direct laryngoscopy does no harm if one uses a small laryngoscope and when looking for a diphtheritic membrane one sometimes finds a foreign body.

"When doing a laryngoscopy one should always have a small bronchoscope handy and if the laryngoscopy causes spasm of cyanosis it is not hard to pass the bronchoscope. It frequently happens when a foreign body has been aspirated and is lodged in the larynx that when the laryngoscope is passed and the larynx relaxes the object slips through into the bronchi, so that by having the bronchoscope ready for use one may save a number of cases.

DR. KOPLIK said: "There has never been anything more wonderful than the removal of a foreign body from the bronchi and esophagus and yet we should not forget that bronchoscopy is a very serious operation in children. I have noticed that Dr. Yankauer takes great precautions against accidents and I think we should emphasize this fact.

"Every one appreciates the great difficulties in making a diagnosis and that occasionally where it is not expected a foreign body is found by bronchoscopy and also we appreciate that a great deal depends upon the history and that we should endeavor to get the history though it is rarely that we do get a history, but we may get a history of a cough that has persisted for a long time, or a cough with spasm that is very characteristic when a foreign body is present in the bronchi. If in addition there is a certain amount of collapse of the lung or a pneumonia or the signs described by Dr. Yankauer, which are frequently heard and frequently not heard, we may feel quite confident of the presence of a foreign body.

"Another point we should not forget is that the x-ray does not always discover a foreign body. Only the other day I was called up by a physician in regard to a case in which there was the possibility that a child had swallowed a foreign body. He said the x-ray did not show the presence of a foreign body. I told him that it was

possible for a child to have a bean or a melon seed or some other vegetable substance in the bronchi which the x-ray would not reveal.

"Dr. Rotch, in 1906, reported ten cases of foreign body in the esophagus and lungs before the American Pediatric Society. These children ranged in age from early infancy to ten years of age. In five of these the foreign body was aspirated into the lung and all of these children recovered either by coughing up the foreign body or else an abscess formed and the foreign body was eventually coughed up. The foreign body in one of these cases was nothing less than the arm and hand of a doll and the child coughed that up. All of these cases except one recovered without any interference and in that case a bone was extracted from the esophagus by probang. It is well to remember not to allow yourself to become panicky because there is a history of a foreign body having been swallowed for a study of these cases shows that they are not usually fatal even though an abscess forms. I reported a case at the time Dr. Rotch reported his cases. In this instance the child had swallowed a peanut and an abscess formed in the lung which was operated upon. This child recovered. On the other hand, I know of cases that have been bronchoscoped and have died. I have had three such cases and you may probably say that they died because the children were in bad condition. One of these children swallowed a medal, was bronchoscoped, the body being in the esophagus and died twelve hours afterward. In another case the diagnosis was pneumonia though of indefinite signs. It was difficult in this case to get a history, but it seemed that something was missed and a foreign body was suspected. The boy was sent to a hospital and bronchoscoped and after the bronchoscopy the child did not breathe well and finally passed away, although he was in good condition before the bronchoscopy was performed and it is possible that the bronchoscopy hastened the fatal end.

DR. ELI LONG said: "I must confess I cannot see how that boy could have been killed by looking into his bronchi. I am qualified to speak of bronchoscopy and direct inspection in diphtheria and it is notable that our mortality has been reduced though the incidence of the disease has not been decreased. In many cases in which it is difficult to make a diagnosis between diphtheria and catarrhal inflammation any thing that offers help is welcome and making a direct inspection as Dr. Gover has described is very easy and it is a great addition to our means of making a diagnosis.

DR. YANKAUER, in closing, said: "In regard to the question of the seriousness of bronchoscopy in children, I want to say that when a foreign body case is brought to be bronchoscoped soon after the swallowing or inhalation has occurred there is almost no danger from bronchoscopy. The mortality is very low. But when the foreign body has been present for weeks and pneumonia has developed, there is considerable irritation along the trachea and bronchoscopy is then a much more serious procedure. Nevertheless it must be done because without removal of the foreign body abscess formation occurs and the large majority of these cases prove fatal. The statistics as I



remember are that about 66 per cent. of the cases in which foreign bodies have been inhaled are fatal if the foreign body has not been extracted, and something like 11 per cent. result in death when the foreign body is removed by bronchoscopy. We must get away from the idea that a foreign body will be coughed out when it is once impacted. In a large experience like that of Dr. Koplik he may have run across three or four cases in which the foreign body was coughed up, but a large number of patients never cough them out, and in many of these cases the correct diagnosis is not made.

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## BRIEF OF CURRENT LITERATURE

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### DISEASES OF CHILDREN

**Variations in Infants of Total Blood Solids and the Concentration of Sodium Chloride in the Plasma.**—A. M. Courtney and H. L. Fales (*Amer. Jour. Dis. Child.*, 1917, xiv, 202) say that the normal infants studied had about the same concentration of chloride in the plasma as normal adults; the average for total solids in the blood was about 5 per cent. lower in infants than in adults. In pneumonia there was irregularity in the values found, both for total solids and chloride in the plasma, which is difficult to account for. Children suffering from tetany showed a tendency to slightly higher total solids and higher chloride in the plasma than was found in any of the other pathologic conditions studied. Children suffering from malnutrition and digestive disorders showed the lowest chloride in the plasma of all those investigated. Children with nutritional edema all showed abnormally dilute blood, with chloride in the plasma much below normal, though not lower than that of other sick infants. Infants with sclerema had nearly normal total solids in the blood, with chloride in the plasma like that of the other pathologic cases, excepting the marasmus group. There was no constant relation between the variations in total solids of the blood and those in chloride of the plasma. Saline hypodermoclysis seemed to affect the percentage of total solids very little, but to raise the chloride in the plasma nearly to normal. In general, all infants not in normal condition had low blood chloride, frequently very much lower than normal, but, except in edema, or under some unusual condition of blood concentration, the percentage of the total solids in the blood of infants tended to remain constant.

**Empyema.**—According to H. M. Richter (*Arch. Pediat.*, 1917, xxxiv, 696) three factors contribute to the notoriously high mortality of empyema in children: first, the intoxication of suppuration; second, the loss of proteid material from prolonged suppuration; third, the collapse of the infant's lungs, the median diaphragm of infants being so frail that the opposite lung loses much of its volume. Of these factors the first can readily be controlled by any form of drainage. The simplest form of treatment is aspiration in a rational



manner; suddenly and completely to empty a pleural effusion of any considerable size is essentially wrong. Given a pleura containing a pint of pus not more than half of the amount should be removed—forty-eight hours later, perhaps, the greater part of what was left should be removed, and so on until the pleura is well emptied in the course of from three to six aspirations. Where infection is not controlled and an increasing degree of intoxication obviously calls for more adequate treatment, drainage of the pleura becomes necessary; but drainage has commonly resulted in a high mortality in young children, partly due to the virulence of the mixed infection which ensues, but quite as much due to the serious loss of proteid that accompanies the loss of so much pus. It is essential in draining the pleura that we obliterate the pleural cavity as quickly as possible by the simple expedient of drawing the lung up to the chest wall. The best means of accomplishing this purpose is one of the modifications of Perthes' method of continuous aspiration.

**Importance of Ligaments of the Ankle in Correction of Congenital Clubfoot.**—I. Zadek and E. L. Barnett (*Jour. A. M. A.*, 1917, lxi, 1057) state that when congenital clubfoot is treated by the usual methods practically none of the severe cases shows dorsal flexion to a right angle without breaking the mediotarsal joint. In view of this observation of failure to procure sufficient dorsal flexion to insure stable locomotion, they divide the posterior ligaments of the ankle subcutaneously. From a study of these cases by the Röntgen ray, we conclude that the only reliable test for the correction of the equinus if there is a rounded sole is a röntgenogram. Many cases which have shown apparent overcorrection, when studied by the Röntgen ray show a break at the mediotarsal joint, with the malposition of the os calcis not rectified. These are the cases which later, never having had the equinus overcorrected, gradually become worse and constitute the early "relapsed clubfeet." The technic employed is to use a tenotomy knife with a long shank and small blade with a cutting edge only on one side. The knife is inserted on the inner side of the ankle just at the inner edge of the Achilles tendon, and on a level with the tip of the internal malleolus. The back of the blade is turned inward. After penetrating from a quarter to half an inch, depending on the age of the patient, the blade is turned so as to lift the vessels, nerves, and other structures up on its back, and the blade is pushed deeper. Maintaining this position, the blade is swept outward from the internal malleolus while pushing up on the foot. After all the resistant structures have been cut, the tenotome is withdrawn and the foot is pushed up. There is a give and sometimes an audible cracking. Now one finds the os calcis tilted up. This procedure should not be used soon after manual correction has been attempted, as the foot broken and weakened at the mediotarsal joint will give at this point, and thus will not allow sufficient leverage to obtain the desired dorsal flexion of the foot as a whole.

# THE AMERICAN JOURNAL OF OBSTETRICS

AND

DISEASES OF WOMEN AND CHILDREN.

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**THE AMERICAN JOURNAL OF OBSTETRICS  
AND DISEASES OF WOMEN AND  
CHILDREN.  
1868-1918.**

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A HALF CENTURY AGO, during the early years of the reconstruction period following the Civil War, there was begun the publication, as a quarterly, of the AMERICAN JOURNAL OF OBSTETRICS. It was to be devoted as stated in its first prospectus, to obstetrics and the diseases of women and children. During these fifty years it has enjoyed an uninterrupted existence in this field of medical journalism and retained the high standard among the profession which has always been the aim of its editors and publishers.

It would seem fitting to commemorate the completion of the first half century of the life of the AMERICAN JOURNAL OF OBSTETRICS by a history of medical activities and accomplishments during this period—a period marked by the rise and many times, the fall, of theories and practices untold in numbers, by the lives and words and works of physicians, some of whose names have become household words in medicine and others who might be forgotten but for their record in these printed pages, by discoveries and devices too numerous to detail, by disputes of facts and ideas, by claims and counter claims—all reflecting the desire and the intention to do good, to alleviate suffering and to place the specialty of obstetrics and gynecology on a firm and substantial basis. But this task has proved too great a one and the present incumbent must content himself with a briefer reference to the growth and development of this periodical and of the history of his predecessors in the editor's chair.

The first number of the AMERICAN JOURNAL OF OBSTETRICS appeared in May, 1868, under the editorship of Dr. B. F. Dawson, who had associated with him in its management, Dr. E. Noeggerath,

both well-known practitioners of New York at that time. It was announced in an introductory editorial that Dr. Noeggerath was about to start for Europe to obtain suitable articles for the journal, it being evidently considered at that period and for some time later, that the eclat of foreign contributions was necessary for the standing and success of an American medical publication.

The names which appear among the contributors of the early numbers of the journal are those which mark the milestones in the progress of the specialty in this country and give ample evidence of the importance which the subject occupied even at that time. In reading these contributions we marvel at the skill, judgment and intuition displayed by the authors in arriving at diagnoses based entirely on clinical observations and without the medium of the laboratory and other aids which we now consider quite essential in practice. A reference to the contents of the initial number may prove of interest to the present generation. The first article was based on the histories of eight cases of placenta previa, by Prof. T. Gaillard Thomas, who at that time already occupied an important position as specialist in his field in New York. This was followed by a paper on the pathology and treatment of the different forms of croup, by Prof. A. Jacobi, in which he presented a series of over 200 cases in which tracheotomy was employed as a life-saving measure. The rectum in its relations to uterine disease is next taken up by Prof. H. B. Storer, of Boston, who points out that the relation between these two conditions is generally "misappreciated" or lost sight of. Prof. Storer believed the association in women so close that it demanded the attention of the gynecologist rather than of the general surgeon. He also pleaded for an improvement in the treatment of this condition and presented a series of cases to demonstrate the necessity of accurate methods of diagnosis. With a description of a case of diabetes in an infant by Dr. James L. Brown, the original communications to the first number are completed. The publication of the Transactions of the New York Obstetrical Society was begun in the introductory issue of the Journal and has been continued uninterruptedly to the present time. In the succeeding numbers of the first volume we find many other interesting clinical presentations and also a public complaint regarding the appropriation of Prof. Thomas' article on placenta previa by another medical journal without giving due credit to the source of original appearance—an attempt at plagiarism from which present-day journals are unfortunately not always free.

In the second volume we find the name of Prof. Jacobi among the

editors and the volume is opened by an interesting article by Dr. Noeggerath in which he advocates the puncture of ovarian cystic tumors through the vagina by means of a curved trocar or "stilette." An announcement in this number is concerned with four prizes offered by the Journal for essays on the etiology and treatment of catarrh of the uterus, on the morbid anatomy of the placenta, electricity in the treatment of diseases of infants and children, congenital deformities and diseases depending on maladies of the uterus or membranes. We also find among the translations of foreign articles a long communication from Prof. Simon of Heidelberg in which he disputes with Dr. Nathan Bozeman the priority of a certain operation for the cure of vesicovaginal fistula.

The character of the articles in the earlier volumes is largely clinical, and laboratory and physiological research had not yet begun to play any part in medical writings.

Dr. Dawson continued as editor until May, 1874, when he announced his retirement and the assumption of this office by Dr. Paul F. Mundé, his former associate. In an editorial article in this number Dr. Dawson lays bare some of the trials and tribulations with which he had to contend during the early years of the Journal's existence. It appears that the firm of Morehead, Bond & Company, to whom had been entrusted the publication of the Journal, failed after the appearance of the third number, and Dr. Dawson was compelled to purchase their interests in order to keep it up. W. A. Townsend & Adams then assumed the obligation and continued to publish the Journal for about two years, when they likewise failed, and Dr. Dawson was again forced to purchase their rights, and became involved in protracted law suits, with considerable personal loss. Baldwin & Company then took the publication in hand, but the firm soon after dissolved and Dr. Dawson finally succeeded in persuading the old and well-established house of William Wood & Company to purchase his interest in the Journal. Successive generations of this firm have continued uninterruptedly in possession of the AMERICAN JOURNAL OF OBSTETRICS to the present day. Dr. Dawson's personal interest and attachment to the publication of which he was the support and guiding spirit during the earlier years of its existence is shown by his offer on resigning his editorship, of a prize of \$150.00 in gold for an annual prize essay. Whether this was ever awarded does not appear.

Dr. Dawson came from an old New York family, having been born in this city in 1847. He was graduated in 1866 from the College of Physicians and Surgeons and developed his practice along the



lines of obstetrics, gynecology and the diseases of children, writing numerous articles on the latter topic during the earlier years of his professional career. Later on he devoted more attention to gynecology and devised a number of ingenious instruments among which the ovariectomy clamp, a special form of Sims' speculum and a galvanocautery battery are worthy of mention. Dr. Dawson was for many years physician to the out-door department and later assistant surgeon to the Woman's Hospital and also for a short time professor of gynecology in the New York Post-graduate Medical School. He was a Fellow of the New York Obstetrical Society and succeeded on the death of the President, Dr. Peasley, to this office. As already stated he gave up his editorial connection with the AMERICAN JOURNAL OF OBSTETRICS in 1874 but continued to contribute to the same. A sufferer from diabetes mellitus, he finally succumbed to this disease on April 3, 1888. Frequent references are found of his personal and social popularity among his associates, and had his life been spared he would undoubtedly have continued to rank among the foremost of American gynecologists.

The salutatory of Dr. Paul F. Mundé, successor of Dr. Dawson as sole editor, appears in the issue of August, 1874, in which he announces his hope and intention of making the AMERICAN JOURNAL OF OBSTETRICS of scientific rank second to none of its European contemporaries. He believed that the burden of fulfilling this high standard rested with the medical profession of America, not so much, as he claimed, with the general practitioner, as with the specialist from whose effort the art of gynecology in this country had attained its present exalted position and whose interest and duty it should be to encourage a journal devoted solely to his specialty. To this Dr. Mundé adds a personal appeal for their aid in realizing his desire of making the AMERICAN JOURNAL OF OBSTETRICS known at home and abroad as the acknowledged organ of American gynecology.

A quarterly list of literature in obstetrics and gynecology was now begun and also a more extended review of the articles in foreign, principally continental journals, of which the German at that time preponderated. Illustrations on stone and wood were employed in a few cases and were often more satisfactory in interpreting the author's desires than the more frequent process reproductions of a later day.

Paul F. Mundé, M. D., LL. D., was born in Germany, September 7, 1846. His father was a physician who was numbered among the Revolutionists of 1848 and, having a price put upon his head, was

compelled to take refuge in America with his wife and family. The elder Mundé settled in Florence, Mass., and the son, after graduating from the Boston Latin School in 1860, entered the medical department of Yale University in 1863. Impatient to enter the Civil War he secured a place as "acting medical cadet" in the Union Army. He was assigned to work in Boston, much to his disappointment, but even a personal appeal to President Lincoln, failed to secure a transfer to the front. At the close of the war the interrupted medical studies were resumed at Harvard Medical School, from which Dr. Mundé graduated with high honors in 1866. Following his graduation he went to Germany where he remained for seven years pursuing his studies. The Austrian-Prussian War being in progress at the time, he entered the Bavarian Contingent of the Austrian Army and served as assistant volunteer surgeon through this contest, receiving the Medal of Honor for distinguished services on the field of battle. In 1867 he became assistant to Scanzoni at the Würzburg Maternity Hospital where he remained for nearly three years in intimate association with this distinguished obstetrician and gynecologist. In 1870 the Franco-Prussian War proved another temptation which could not be resisted and Dr. Mundé again went through the active campaign which ended in the siege of Paris. After the war Dr. Mundé took up his studies in Heidelberg and from there went to Berlin, London, Edinburgh and Paris, at all of which places he associated himself with the leaders in his special field, so that when he returned to America in 1873 he was well fitted to take up this work. Soon after he took editorial charge of the *AMERICAN JOURNAL OF OBSTETRICS* and continued this association from 1874 until his retirement in 1892. During this period the Journal gained a high place in the field of American medical periodicals.

Dr. Mundé was very active in the formation of the American Gynecological Society, serving first as Secretary and later as President. He was also a member and president of the New York Obstetrical Society, the British Gynecological Society and numerous other associations. He devoted a great deal of his time to the development of the gynecological service at Mount Sinai Hospital and made this one of the most important and best known in the country. In addition to a large number of separate articles he was also instrumental in producing two books, "Minor Surgical Gynecology" and a "Practical Treatise on Diseases of Women," the latter in conjunction with Dr. T. Gaillard Thomas. Dr. Mundé was a member of the teaching staff of the New York Polyclinic

and served as Professor of Gynecology at Dartmouth College, the latter institution conferring upon him the Degree of LL. D.

By his contemporaries Dr. Mundé was highly regarded for his honesty of purpose, courtesy and straightforwardness. He wielded a strong influence and had a large following during his professional career, which was terminated by his death on February 7, 1902.

Dr. Mundé had continued as editor of the *Journal* until 1892, when its direction was taken up by Dr. Brooks H. Wells, who had previously acted as associate editor, and who continued in this office for a period of a quarter of a century until his untimely death in July of last year.

The recent decease of Dr. Wells makes his long association with the journal a living memory to many of its readers. For among these were many of his friends and coworkers and their frequent selection of this publication as a medium for their scientific contributions may be accepted as a tribute to his own standing and achievements. Dr. Wells throughout his professional career was actively engaged in the special fields represented by the journal of which he was the editor and was therefore in constant and close personal contact with the progress and development of this branch of medicine. His unfailing courtesy, modesty, and good judgment, as exercised in his professional capacity, also served to distinguish his editorial work and retained for him the favor and respect of his colleagues.

Dr. Brooks Hughes Wells, the son of the Rev. Edward Livingston Wells, was born July 28, 1859 and his death on July 6, 1917, resulted from an accident. He was graduated from the College of Physicians and Surgeons, New York, in the Class of 1884, and after having served his hospital internship, took up his residence in New York City where he continued in active practice up to the time of his death. Dr. Wells was for many years Professor of Gynecology in the Polyclinic Medical School and Hospital and likewise Associate Surgeon to the Woman's Hospital. He was a Fellow of the American Gynecological and other leading medical societies.

It would prove an endless and quite impossible task to record in detail the many noteworthy contributions to American obstetrical and gynecological literature that have been published to the profession in the pages of the *Journal*. A review of the contents of the assembled volumes discloses the names of the most noteworthy workers in the field to which it is devoted, in the earlier volumes men already well known and later those who were to achieve distinction. By the repeated appearance of articles from their

pens within its pages they gave evidence of the good-will which they entertained toward this publication.

The study of obstetrics and diseases of women peculiar to their sex, constitutes a specialty that continues to maintain an importance in medicine that has not and will not decline with the passing of the years. The female sexual organs and their orderly functioning constitutes the most important and essential feature in the life history of the sex and the regulation or possible restoration of these functions is one of the most praiseworthy and undeniable demands of the practice of medicine. Moreover, the field is such a broad one that there is no need for it to be associated in practice or in journalism with other distinct aspects of medical and surgical endeavor. Obstetrics and gynecology will continue to be regarded in the domain of specialism by all who by training and experience understand their individualism and character. They are subjects that do not fall within the province of those who because of their purely surgical training consider the operative aspects of these fields as particularly suitable to their ministrations. An obstetrician must have a training which fits him to do surgery of the lower abdomen but he must apply this training with due consideration to the purely obstetrical features and possibilities—in other words his judgment must be that of an obstetrician in the widest sense of the term and not that of the surgeon.

Gynecology and obstetrics before the middle of the last century were regarded in a general way from a medical rather than from a surgical point of view, and the establishment of the Woman's Hospital in the City of New York in 1855 may be said to have marked the foundation of surgical gynecology. J. Marion Sims and his immediate followers wielded an influence that marks an important advance in medical science and art and served to place the American gynecologist in the front rank of the profession. The perfection in plastic surgery which began with Sims, Emmett, Hegar and others, constitutes one of the most brilliant advances in medicine, and the technical skill developed by these earlier masters in corrective methods is deserving of our highest praise. In the course of time the pendulum of gynecologic practice swung very far to the surgical side. The treatment of gynecological disturbances by drugs and pessaries and local measures was succeeded by an era of the scalpel. The "ovariotomist" of this period found a fruitful field, for many of the ills of womankind were turned over to his radical and often exaggerated ministrations. But a saner point of view finally came about. The development of a more satisfactory



knowledge of the pathology of the female sexual organs contributed largely to this result and to-day we again find the therapeutic resources of the gynecologist extended beyond a mere manual dexterity with the knife. The introduction of radiotherapy opened a new and as yet only partially explored field with untold possibilities in its power to alleviate and often to cure. And even more recently the attention accorded to the close interrelation between the female sexual organs and the glands of internal secretion will probably serve to increase our therapeutic resources in gynecology and obstetrics to a degree as yet undefined and undetermined. A change has also come about in the field of obstetrics. The recognition of the contagiousness of puerperal fever brought the practice of this branch of medicine under the domain of surgical thought and endeavor until the termination of pregnancy by other than the natural route no longer excites comment. Symphyseotomy, pubiotomy and Cesarean section, both abdominal and vaginal, have become safer since the advent of antiseptic and aseptic surgery and the field of application for Cesarean section in particular has become largely extended and preferred to the more mutilating operations. But the judgment required to determine the advisability of these radical methods of delivery must be that of the obstetrician and not of the surgeon. The latter is not justified in laying claim to these operative procedures simply because his purely surgical training leads him to regard the mechanical as the only and preferable method of delivering a child in a given case. Rather the obstetrician must be surgically trained to attack this problem when his judgment dictates that this is the essential and only course to be pursued. Obstetrics will only be elevated to a commensurate dignity when its importance as an entity is fully recognized, the precincts of which are not to be invaded in the manner already indicated. It is in the obstetrical field that a great future may be said to lie, and we find that, in recent years particularly, increased attention is being given to certain phases of the subject that were formerly not accorded their proper respect. We find for example that the laity has become very greatly interested in so-called prenatal and postnatal work and the fact that the production of healthy children extends beyond the mere limits of the care given at the time of delivery. This is a most fortunate development because it has served to increase the dignity of the obstetric art and to widen the horizon of interest.

During the entire period of the Journal's existence, pediatrics has been included as a speciality appropriately allied to obstetrics

and many well-known pediatricians have been associated in an editorial capacity with the publication, beginning with Prof. A. Jacobi and later including Drs. La Fetra, Southworth and others. When this Journal was founded, the pediatrician cannot be said to have come into his own, but since then the development of this branch of medicine has been accompanied by the appearance of periodical publications devoted exclusively to this subject and the time seems opportune therefore to discontinue the "Pediatric Department" as such, in the belief that its function has been fully and creditably performed. Yet the obstetrician must not entirely divorce his interests from this field and neither should the pediatrician leave out of consideration those obstetric problems which have a direct influence on the child. In future numbers therefore we expect to limit the pediatric contributions to topics directly related to this borderline field between obstetrics and pediatrics, such as the problems associated with the pre- and postnatal periods, eugenics, infant welfare and questions of an allied nature. We trust that this decision will meet with the approval of our readers.

Confident of the future of obstetrics and gynecology, the present editor is firm in the belief that a medium of publication conducted on ethical lines in the interests of the profession, for the presentation of the results of original research, of clinical observations, of new devices and operations, and other features that constitute marks of progress in gynecology and obstetrics, will meet with a continuation of the favor which the editors and publishers of this journal have always been proud to acknowledge during the first half century of its existence.

GEO. W. KOSMAK, M. D.

MAY 1, 1918.

## ORIGINAL COMMUNICATIONS.

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### A CONSIDERATION OF SOME OF THE ANATOMICAL FACTORS CONCERNED IN THE PRODUCTION OF DEFORMED PELVES.\*

BY

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(With forty-nine illustrations.)

THROUGH the courteous coöperation of the various members of the department of pathology, it has been possible during the course of years to obtain at autopsy the pelves from a number of women who had died in the obstetrical service, and it is my purpose to demonstrate, mostly by means of photographic reproductions, certain points connected with eight abnormal pelves secured in this way. This relatively small series contains representatives of a number of types of deformed pelvis and, in addition to affording an opportunity for demonstrating the characteristic changes in shape and their effect upon the course of labor, it also gives information about certain etiological factors concerned in the production of the abnormalities.

In order to facilitate comparison, corresponding views of the several specimens are presented, and the following aspects of each specimen are shown: (*a*) Front view of pelvis with normal inclination of superior strait, the pelvis being so held that the anterior superior and pubic spines lie in the same vertical plane; (*b*) front view of pelvis, so held that the plane of the superior strait is vertical; (*c*) pelvic outlet, with the pelvis so held that the relation between the anteroposterior and transverse diameters is clearly apparent; (*d*) front view of sacrum, with its promontory and tip in the same vertical line; and (*e*) side view of sacrum showing one articular surface and the vertical and side to side curvatures of its anterior

\* Read in abstract before the Johns Hopkins Medical Society, February 18, 1918.

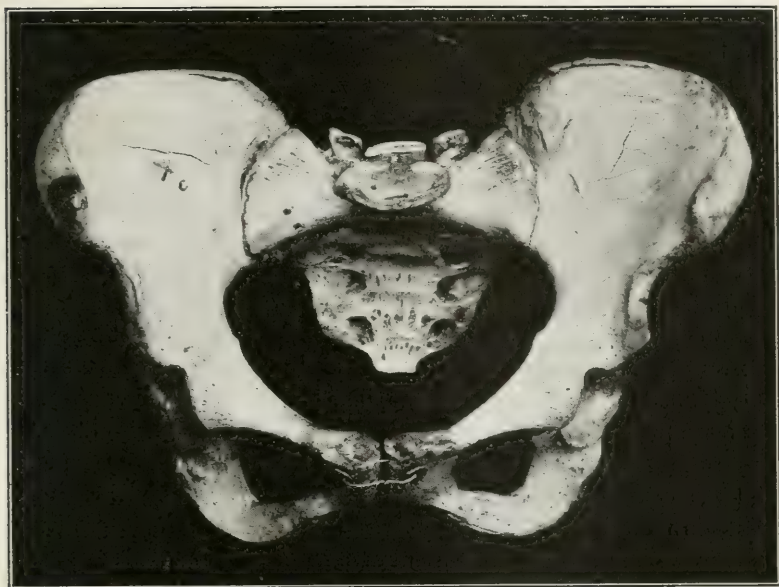


FIG. 1.—Normal pelvis, normal inclination  $\times \frac{1}{3}$ . Spines 23.5, crests 26; sup. strait: c.v. 10.25, trans. 13, obq. 12.75. Terminal length 20 cm.: 7.5, 5.5, 7 cm.



FIG. 2.—Same pelvis, outlet  $\times \frac{1}{3}$ . Ant. post. 11, trans. 11 cm.



surface. In the first three views the illustrations are one-third and in the last two one-half natural size.

Figures 1 to 4 represent several views of a normal pelvis and serve not only for purposes of comparison with the abnormal types, but also to accentuate certain points in the anatomy of the normal pelvis. Fig. 1 gives a good idea of the appearance of the superior strait normally inclined at an angle of  $55^{\circ}$  or  $60^{\circ}$  with the horizon, and will contrast markedly with the conditions obtaining in pelvis VII and VIII. It also enables us to define the term "terminal length." This expression was first used by Breus and Kolisko to describe not only the linea terminalis, with which we are all familiar, but also its extension backward in a straight line to the iliac crest. It is divided into three parts, pubic, iliac and sacral; the first extending from the symphysis pubis to the iliopectineal eminence, the second from the latter to the anterior margin of the sacroiliac joint, and the third from that point to the posterior portion of the iliac crest. In the normal adult pelvis the terminal length varies from 19.5 to 21 cm.; while its three portions are approximately equal, measuring 6.5 to 7, 6 to 6.5 and 7 to 7.5 cm. respectively. In the pelvis here represented, these measurements are 20, and 7.5, 5.5 and 7 cm. respectively.

Breus and Kolisko laid great stress upon the varying rate of growth of the three portions of the terminal length at different periods of childhood and adolescence, and called particular attention to the retarded growth of the iliac portion in individuals suffering from rickets. In each pelvis of the series these measurements will be given, and thus afford opportunity for testing the correctness of Breus and Kolisko's views.

Figure 2 gives a good idea of a normal pelvic outlet, and its measurements of 11 cm. for the anteroposterior and transverse diameters closely approximate the theoretical dimensions of 11.5 and 11 cm. respectively.

Figures 3 and 4 represent two aspects of the normal sacrum; in the former its usual composition from five vertebræ is apparent, and it is also seen that its greatest width exceeds its height—11 and 10 cm. respectively. Turner in 1885 directed especial attention to this relationship, designated it as the pelvic index, and stated that normally in white women it should vary from 112 to 116. He also designated sacra as platyhieric and dolichohieric, respectively, according as the width exceeds the height or not, and pointed out that under normal conditions in white women the sacrum is always platyhieric and that the dolichohieric type occurs only among aboriginal peo-

ples. In each pelvis of our series the sacral index will be noted, and in one at least (VIII) it will be found that the sacrum is markedly dolichohieric.



FIG. 3.—Normal pelvis, front view sacrum  $\times \frac{1}{2}$ . Width 11 cm., height 10 cm. index 110.



FIG. 4.—Side view same sacrum, 2 + vertebræ forming joint.

Figure 4 represents the side view of a normal sacrum and shows in the first place that the first two vertebræ and the upper portion of

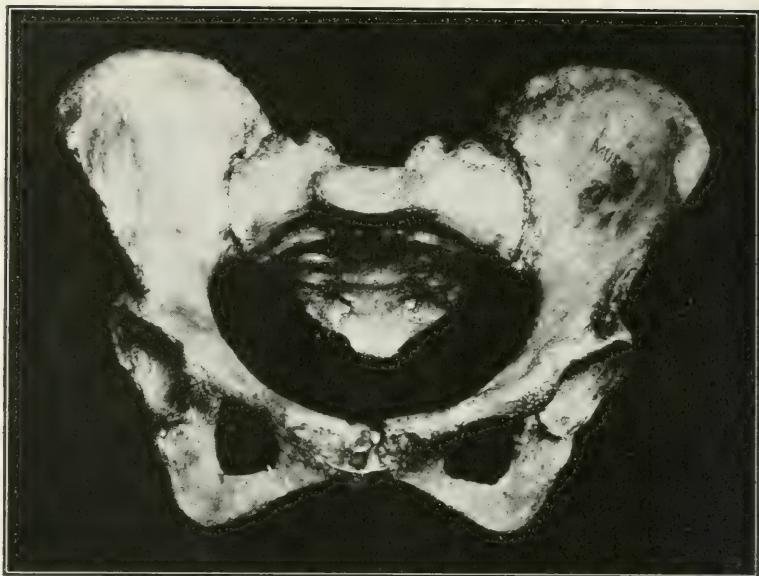


FIG. 5.—Pelvis 1. Simple flat pelvis, normal inclinations  $\times \frac{1}{3}$ . Spines 24, crests 25 cm.; sup. strait: c.v. 9, trans. 12.75, obq. 11 cm. Terminal length 18.25: 6.5, 5, 6.75 cm.

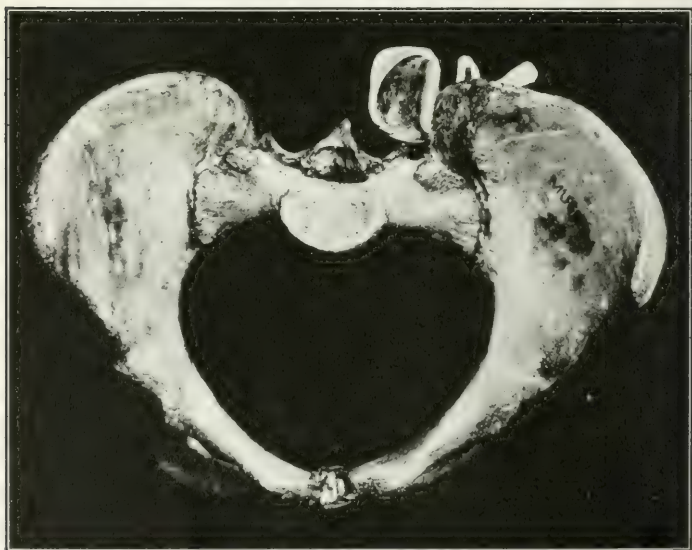


FIG. 6.—Same pelvis, vertical inclination.

the third vertebra enter into the formation of the sacroiliac joint. This may be regarded as the normal condition but, as will be seen in our series, great variations may occur. Thus, only two vertebrae may be involved, while in other specimens three entire vertebrae and occasionally a portion of a fourth may take part in its formation. Attention is also directed to the curvatures of the anterior surface of the sacrum; it being apparent that it is definitely concave from above downward and somewhat less so from side to side. Marked variations in this regard will be noted in some of the pelves of our series.

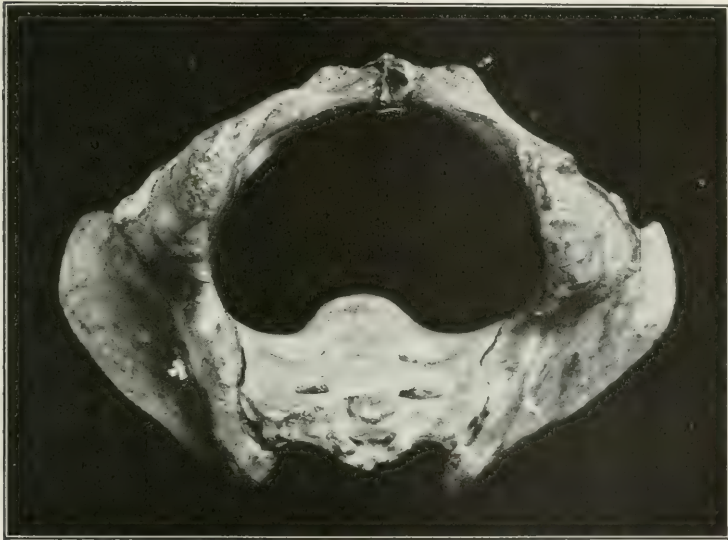


FIG. 7.—Pelvis 1. Simple flat pelvis, outlet  $\times \frac{1}{3}$ . Ant. post. 10.5, trans. 11 cm.

I. *Simple Flat Pelvis* (No. 23). Figures 5 to 9 represent various views of a simple flat pelvis, which was obtained from a woman dying of puerperal infection. Figs. 5 and 6, representing the pelvis with the plane of the superior strait in the normal and vertical inclination, respectively, and give a good idea of the changes in appearance incident to the alteration in the point of view. In the former the superior strait appears distinctly oval in outline, while in the latter it is heart shaped. From the first one would have no hesitation in designating it as a simple flat pelvis, while from the latter one would be inclined to classify it as generally contracted or justominor.



The uncertainty is still further increased when one considers the measurements of the various diameters, as it is apparent that the

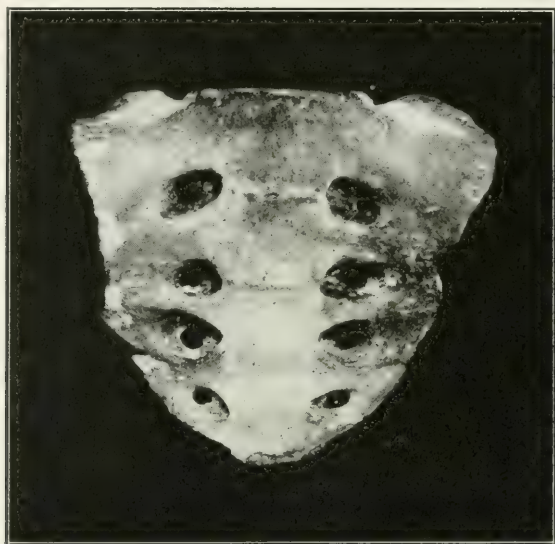


FIG. 8.—Pelvis 1. Simple flat plevis, front view sacrum  $\times \frac{1}{2}$ . Width 11 height 10 cm.; index 110.



FIG. 9.—Side view of same sacrum; two and one-half vertebrae forming joint.

transverse and oblique diameters of the superior strait are shortened as well as the conjugata vera. But, on the other hand, when Fig. 7 shows that the diameters of the inferior strait are practically

normal, it does not seem justifiable to designate it as generally contracted and consequently one is forced to classify it as simple flat pelvis.

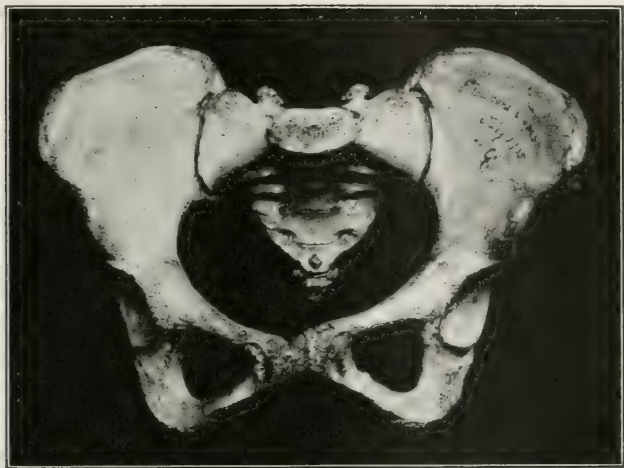


FIG. 10.—Pelvis 2. Atypical generally contracted rhachitic pelvis, normal inclination  $\times \frac{1}{2}$ . Spines 21, crests 22 cm.; sup. strait: c.v. 8, trans. 10.5, obq. 10 cm. Terminal length: 15.5 cm., 5, 4.5, 6 cm.

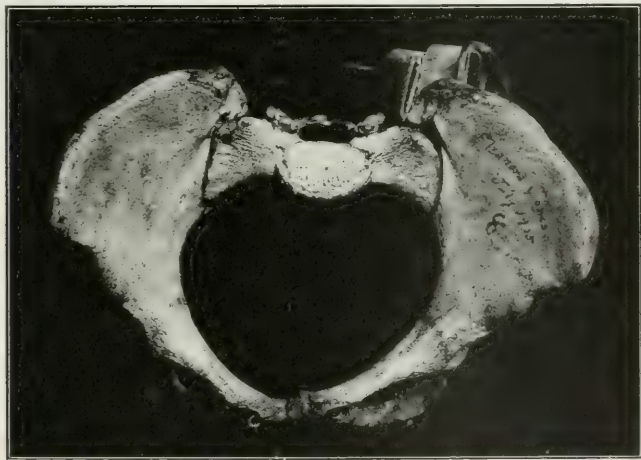


FIG. 11.—Same pelvis, vertical inclination.

In the living woman there was less difficulty, as the shortening of the diagonal and external conjugates, associated with normal dimensions of the other external measurements and of the distance between the tubera ischii, compels one to diagnosticate a simple flat pelvis.

We now come to a group of five pelvis illustrating various types of rhachitic deformity.

II. *Atypical Generally Contracted Rhachitic Pelvis* (pelvis 8, history 2158).—This specimen was obtained from an eighteen-year-old colored girl, who died from general peritonitis five days after a conservative Cesarean section performed late in labor after the pulse had risen to 120. The anatomical diagnosis was "localized fibrinous peritonitis; rhachitic changes in bones of pelvis, legs and ribs."

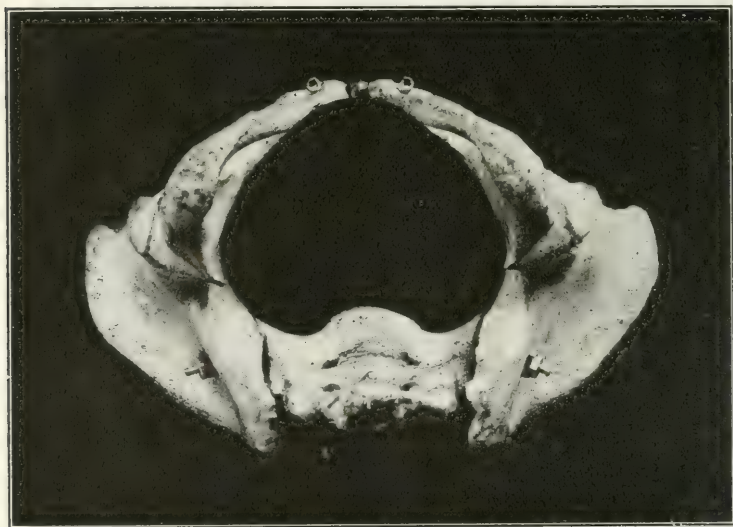


FIG. 12.—Pelvis 2. Atypical generally contracted rhachitic pelvis, outlet  $\times \frac{1}{3}$ .  
Ant. post. 9.25; trans. 10.25.

Figs. 10 and 11 represent the pelvis photographed in the normal and vertical inclinations and show the relative flaring of the anterior-superior spines at the expense of the crests of the ilium, and the generally contracted superior strait, which also presents a slight degree of asymmetry, the symphysis pubis being deflected somewhat to the right of the midline. All of the diameters of the superior strait are definitely shortened, and present the following measurements: conjugata vera 8, transverse 10.5, and oblique 10 cm. The terminal length is reduced to 15.5 cm., while its iliac portion measures only 4.5 cm.—clearly a manifestation of rhachitic inhibition of growth during childhood.

Fig. 12 shows that the outlet does not present the characteristic rhachitic flaring, but on the contrary is distinctly contracted.

Figs. 13 and 14 show that the sacrum does not present rhachitic

changes, is composed of five vertebræ, has normal vertical and side-to-side curvatures, and that three vertebræ take part in the for-



FIG. 13.—Pelvis 2. Atypical generally contracted rhachitic pelvis, front view sacrum  $\times \frac{1}{2}$ . Width 9, height 8.25 cm.; index 109.



FIG. 14.—Side view of same sacrum  $\times \frac{1}{2}$ . Three vertebræ forming joint.

mation of the facies auricularis of the sacroiliac joint. Corresponding to the youth of the patient the component parts of the



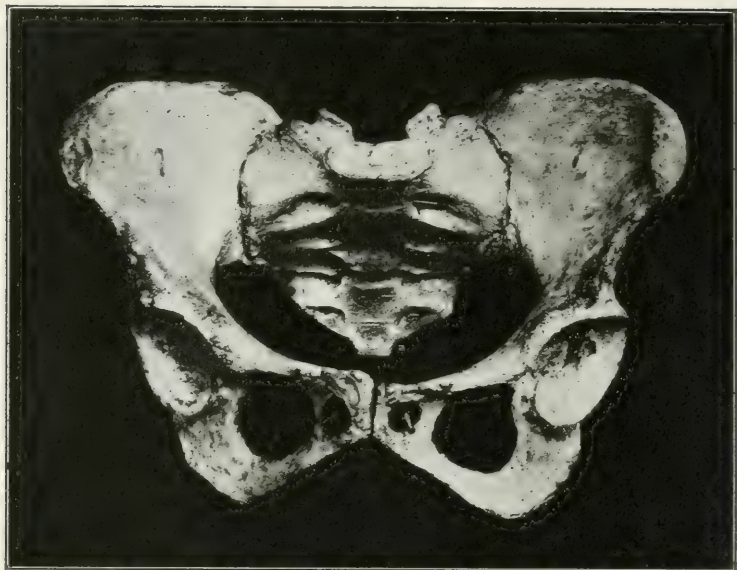


FIG. 15.—Pelvis 3. Flat rhachitic assimilation pelvis, normal inclination  $\times \frac{1}{3}$ . Spines 23, crests 23.5; sup. strait: c.v. 8.5, trans. 13, obq. 11 cm. Terminal length 18 cm.: 6.5, 5.5, 6 cm.

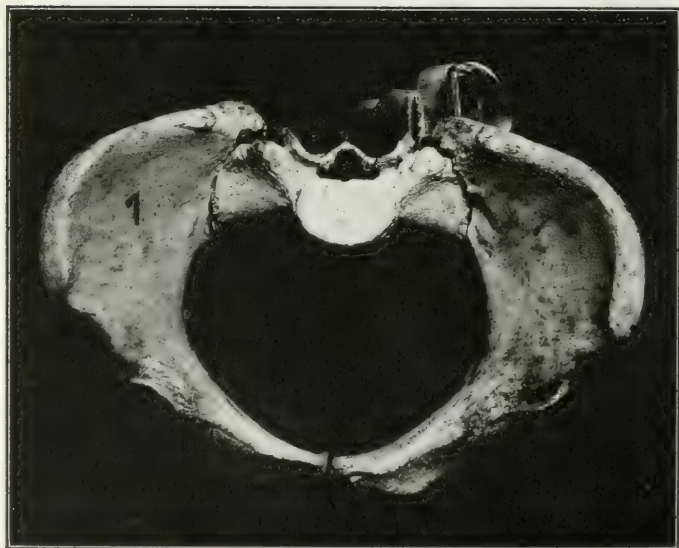


FIG. 16.—Same pelvis, vertical inclination.

sacrum are imperfectly fused; and the first vertebra is almost completely separated from the subjacent portion of the bone. Posteriorly, the sacral canal is in great part exposed, being enclosed only by the arches of the second and third vertebræ.

In this specimen, therefore, the only signs of rickets are offered by the relative flaring of the anterior-superior spines of the ilium, and the abnormal shortening of the iliac portion of the terminal length; so that had definitely rhachitic changes not been present in the leg bones and ribs, it might well have been classified as an extreme example of a generally contracted pelvis.



FIG. 17.—Pelvis 3. Flat rhachitic assimilation pelvis, outlet. Ant. post. 10, trans. 11.5 cm.

III. *Flat Rhachitic Assimilation Pelvis* (pelvis 7, history 2568). This specimen was obtained at autopsy from a 31 year old colored woman who died during delivery from generalized ante partum infection. Anatomical diagnosis? Generalized infection, relaxed puerperal uterus, extensive degeneration of tissue with gas formation, acute splenic tumor.

Figs. 15 and 16 are photographs of the pelvis taken at the normal and vertical inclination, and clearly show the kidney-shaped outline of the superior strait and the flaring of the anterior-superior spines of the ilium. The terminal length is only moderately shortened to 18 cm., while its iliac portion has preserved its normal relation and

consequently shows no rhachitic change. The outlet, however, as shown by Fig. 17, while practically normal, is relatively widened when compared with the superior strait, so that there would be no mechanical obstacle to the passage of the head had it succeeded in passing the superior strait.

Figs. 18 and 32 represent side and front views of the sacrum, and show that it is made up of six vertebræ, the first of which probably represents the assimilated last lumbar vertebra; although, as will be indicated in the section on assimilation, definite statements in this regard can be made only when the entire vertebral column is available for examination. While the base of the sacrum is

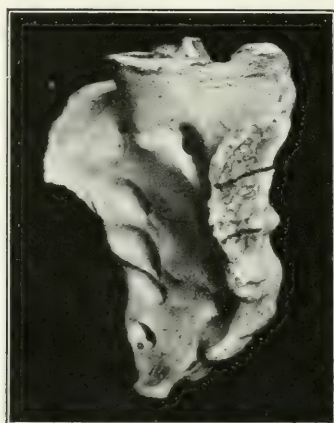


FIG. 18.—Pelvis 3. Flat rhachitic assimilation pelvis, side view sacrum  $\times \frac{1}{2}$ . Note the presence of 6 vertebræ, three of which form joint, the existence of a false promontory, and the absence of characteristic rhachitic curvatures.

approximately normal in width (10 cm.), the addition of the extra vertebra has relatively increased its length, so that the sacral index has become reduced to 100. I would also call attention to the presence of a false promontory at the junction between the first and second vertebræ, as well as to the fact that, while the first three vertebræ enter into the formation of the sacroiliac joint, only the lower half of the ala of the first vertebra is involved in it. It should also be noted that the sacral curvatures characteristic of rhachitis are lacking.

Notwithstanding the absence of several of the characteristic features of rickets, the flaring of the iliac crests, the flattening of the superior strait, and the relative widening of the pelvic outlet amply justify the diagnosis, without taking into consideration the presence of rhachitic manifestations in the bones of the legs.

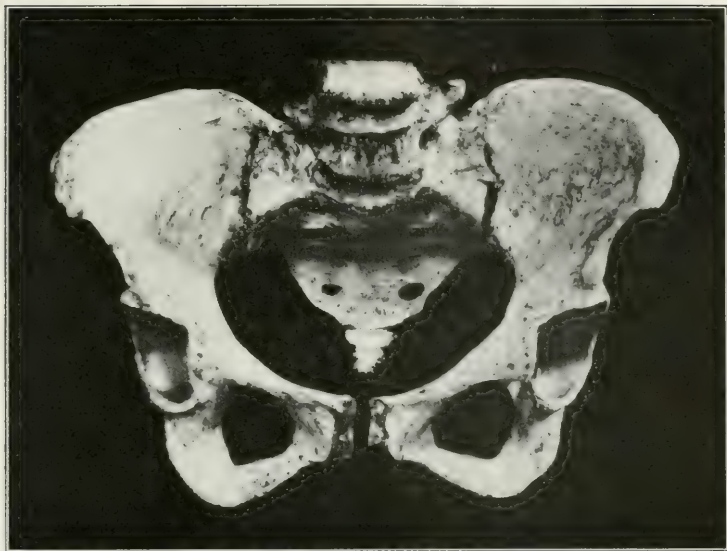


FIG. 19.—Pelvis 4. Generally contracted rhachitic assimilation pelvis, normal inclination  $\times \frac{1}{3}$ . Spines 23, crests 24.5 cm.; sup. strait: c.v. 8.5, trans. 11, obq. 11 cm. Terminal length 18 cm.: 7.5, 5.25, 5.25 cm.

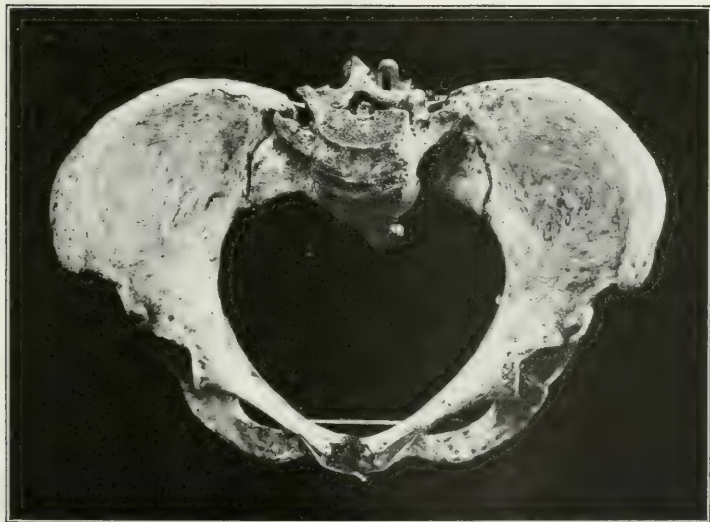


FIG. 20.—Same pelvis, vertical inclination.



IV. *Generally Contracted Rhachitic Assimilation Pelvis* (pelvis 1540, history 8826). This specimen was obtained at autopsy upon a twenty-three-year-old colored woman, who died following an injury to the intestine at her third Cesarean section. Anatomical diagnosis: "Peritonitis, diphtheritic colitis and epithelial necrosis of kidney."

Figs. 19 and 20 represent the usual two views of the pelvis, with the last one and a half lumbar vertebræ still *in situ*, and show the general contraction of the superior strait, the shortening of the iliac portion of the terminal length, and the relative flaring of the anterior-superior spines of the ilium.

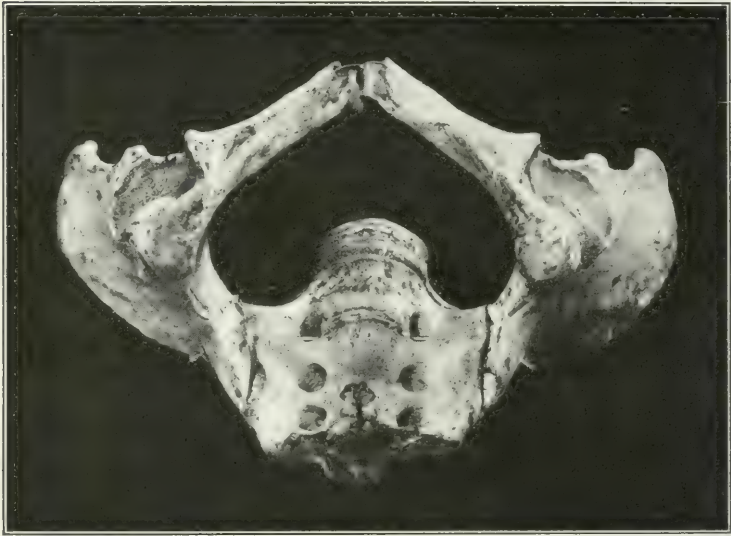


FIG. 21.—Pelvis 4. Generally contracted rhachitic assimilation pelvis, outlet  $\times \frac{1}{3}$ . Ant. post. 11, trans. 11.5 cm.

Fig. 21 shows the characteristic relative widening of the inferior strait and the changes in the sacrum to be described below.

The side and front views of the sacrum, are represented in Figs. 22 and 33, and present the following points of interest. First, the sacrum is made up of six vertebræ, presents a peculiar quadrilateral shape and an index of 108. The presence of prominent, but rudimentary, transverse processes and the fact that the alæ of the first sacral vertebra take only a small part in the formation of the articular surface, makes it probable that the additional vertebra represents the assimilated last lumbar.

Fig. 22 shows clearly that the anterior surface has undergone marked changes and is characteristically rhachitic in appearance. In the first place the vertical concavity is markedly accentuated by a sharp bend in the body of the 4th vertebra, and secondly, the normal side to side concavity has disappeared and has given place to a convexity as the result of the bodies of the vertebræ projecting



FIG. 22.—Pelvis 4. Generally contracted assimilation pelvis, sacrum seen from side  $\times \frac{1}{2}$ . Note rhachitic curvatures, presence of 6 vertebræ of which three form the joint, the greater part being taken by the second vertebra.

beyond the alæ, and thus forming a distinct rounded protuberance occupying the central portion of the entire bone.

In this specimen all the characteristic features of rickets are present and evidently have been superadded to a pelvis originally the seat of assimilation.

V. *Generally Contracted Rhachitic Assimilation Pelvis* (pelvis 6, history 1611).

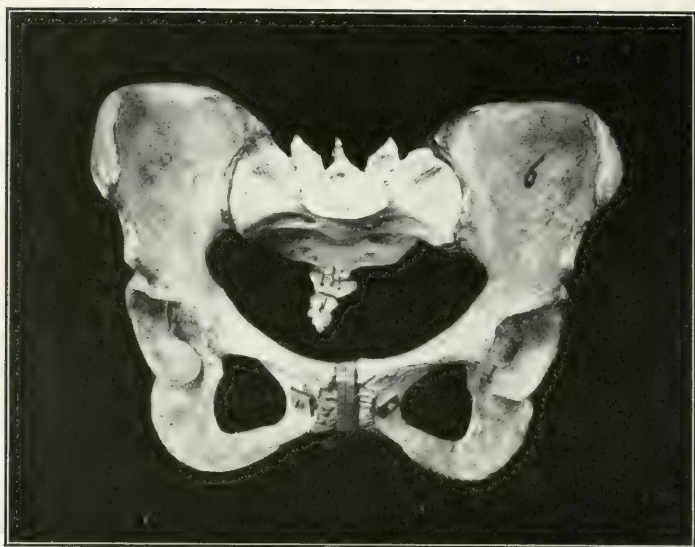


FIG. 23.—Pelvis 5. Generally contracted rhachitic assimilation pelvis, normal inclination  $\times \frac{1}{3}$ . Spines 21, crests 21; sup. strait: c.v. 7.25, trans. 11.75, obq. 10.25 cm. Terminal length 16: 6.25, 4.5, 5.25 cm.

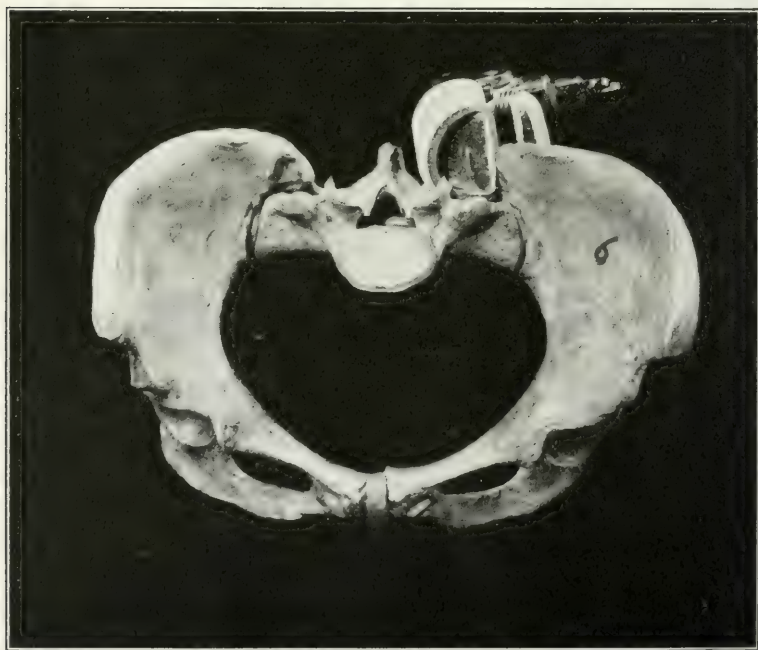


FIG. 24.—Same pelvis, vertical inclination.

This specimen was obtained from a 23-year-old colored woman who died on the seventh day from infection following a second Cesarean section, which was performed late in labor after the patient had already been infected. Figs. 23 and 24 represent the pelvis in the normal and vertical inclinations, respectively, and clearly demonstrate its rhachitic character. The extreme kidney shaped outline of the superior strait is especially noticeable, while the iliac portion of the terminal length is reduced to 4.5 cm. The flaring of the iliac spines and the widening of the pubic arch afford further confirmatory evidence of the rhachitic origin of the deformity.

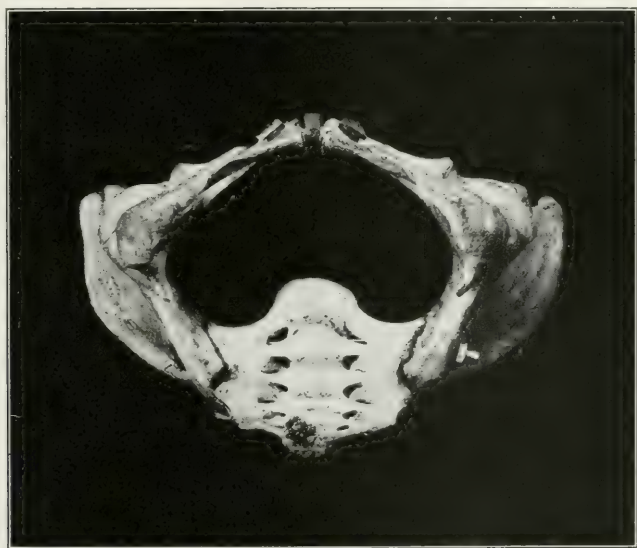


FIG. 25.—Pelvis 5. Generally contracted assimilation pelvis, outlet  $\times \frac{1}{3}$ .  
Ant. post. 11, trans. 13 cm.

Fig. 25 shows that the measurements of the outlet are actually larger than normal, so that it gapes actually, as well as relatively. Figs. 26 and 34 represent side and front views of the sacrum. In the latter it is clearly seen that six vertebræ enter into the formation of the sacrum, and that the first probably represents the assimilated last lumbar vertebra. Attention is directed to the compressed appearance of the sacrum, and especially to the fact that the junctions between the bodies of its component vertebræ are unusually prominent.

The side view, Fig. 26, shows four important features. 1. The vertical concavity of the anterior surface is markedly accentuated



by a sharp bend in the body of the fourth vertebra. 2. The bodies of all the vertebræ project markedly beyond the alæ, thus converting the normal side and side concavity into a convexity. 3. The junctions between the first and second, and second and third vertebræ project markedly beyond the general level, and thus offer an example of what Breus and Kolisko have designated as a "Mittenplatt" sacrum. Furthermore, it is apparent that in the living woman, as well as in the prepared pelvis, this condition must have accentuated the contraction of the birth canal; since the distance from the symphysis pubis to the junction between the second and

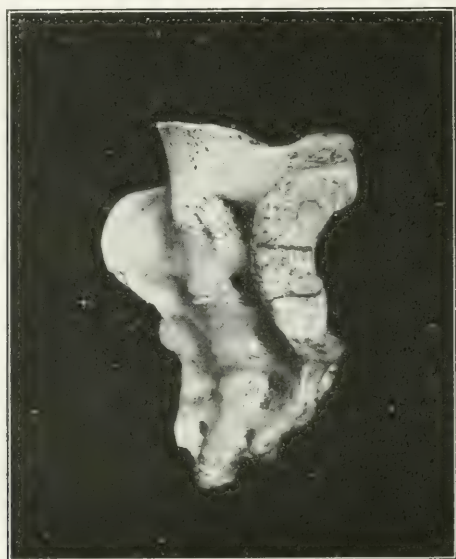


FIG. 26.—Pelvis 5. Generally contracted rhachitic assimilation pelvis, side view of sacrum  $\times \frac{1}{2}$ . Note rhachitic curvatures, presence of 6 vertebræ, three taking part in joint.

third vertebra equals, or even exceeds, the conjugate vera, as well as the pseudoconjugate, extending between the symphysis and the false promontory at the junction of the first and second vertebræ. 4. The alæ of three vertebræ enter into the formation of the sacroiliac joint, and while the first forms the largest fraction of the articular surface, it only corresponds to about one-half the height of the vertebra.

VI. *Generally Contracted Rhachitic Assimilation Pelvis*, with remains of previous pubiotomy wound (pelvis 47, history 4116).

This pelvis was obtained at autopsy upon a 20-year-old colored

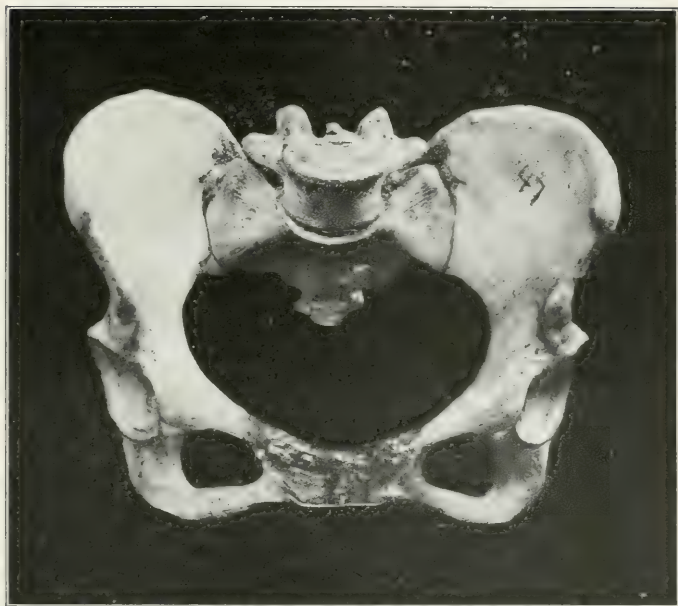


FIG. 27.—Pelvis 6. Generally contracted rhachitic assimilation pelvis, following pubiotomy, normal inclination  $\times \frac{1}{3}$ . Spines 20, crests 20.5 cm.; sup. strait: c.v. 8, trans. 11, obq. 10.35 cm. Terminal length 16.25: 6, 4.75, 5.5 cm.



FIG. 28.—Same pelvis, vertical inclination.

girl who died from peritonitis, five days after a conservative section. Clinically, the case is of interest for two reasons: First, that it is the only death which has occurred in our service following Cesarean section done at an appointed time before the onset of labor; and investigation after the death of the patient showed that the infection was accidental, and due to an unnoticed defect in the sterilizer which resulted in all of the dressings being imperfectly sterilized. In the second place, the first labor of the patient, which had occurred three years previously, had been terminated by high forceps following a left-sided pubiotomy. The convalescence was ideal, and afterwards the patient was able to walk as well and to work as hard as

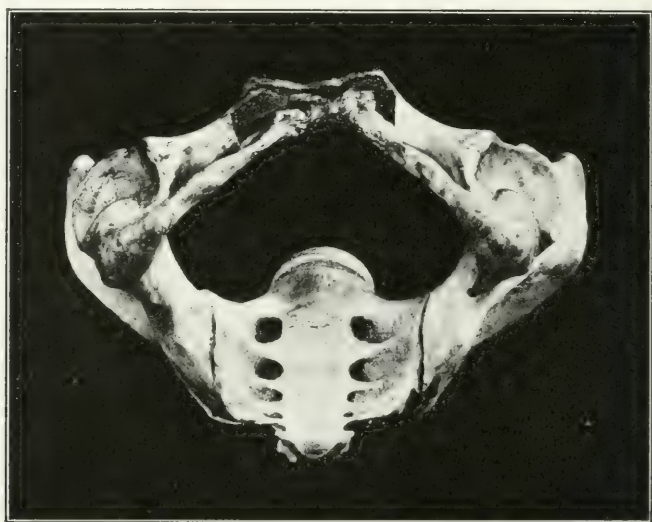


FIG. 29.—Pelvis 6. Generally contracted rhachitic assimilation pelvis, outlet  $\times \frac{1}{3}$ . Ant. post. 10.75, trans. 12 cm.

before the operation. Although healing had occurred by fibrous union and definite motility existed at the site of the pubiotomy wound, the pelvic measurements showed no permanent enlargement, so that Cesarean section was chosen as the most conservative method of ending her second pregnancy.

Figs. 27 and 28 represent the pelvis in the usual two views with the last lumbar vertebra *in situ*, and clearly show the characteristic signs of rhachitic deformity, namely, the flattened and generally contracted superior strait, the shortened iliac portion of the terminal length (4.75 to 16.25 cm.), the flaring of the anterior spines of the ilium, and the widening of the pubic arch. The discoloration upon

the anterior surface of the pubic region represents the site of the previous pubiotomy, which will be more clearly visible in Figs. 29 and 30.

Fig. 29 shows that the pelvic outlet is actually enlarged and presents a transverse diameter of 12 cm., so that when contrasted with the generally contracted superior strait it gapes markedly. The tubera ischii are distinctly everted, and it is apparent that had the head been able to overcome the disproportion at the superior strait it would have encountered no obstacle in passing through the outlet.

The quadrilateral defect noted upon the anterior pelvic wall, has resulted from the major portion of both pubic bones having been

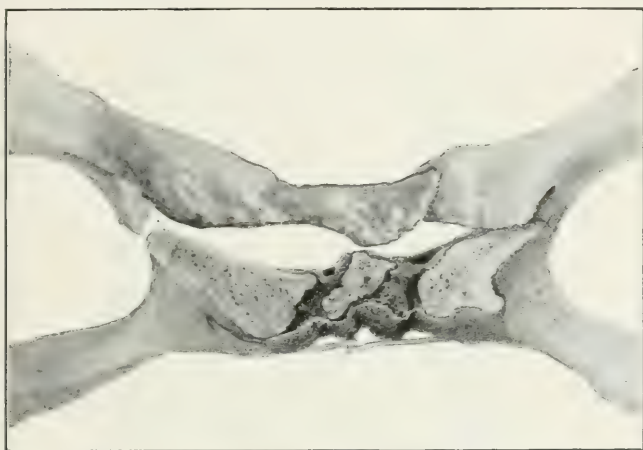


FIG. 30.—Pelvis 6. Front view of pubic region  $\times 1$ , showing conditions at old pubiotomy wound. Note symphyseal cartilage to the right and the triangular fragment of the pubic bone lying between it and the fibrous tissue at the site of the section.

sawn out for the purpose of further study. Fig. 30, which is a natural size photograph of this area, shows clearly the conditions at the lower margin of the incision and affords an excellent opportunity for studying the mode of healing of a pubiotomy wound. It is seen that the symphysis pubis is deflected slightly to the right, while to the left of the symphyseal cartilage is a small wedge shaped portion of bone, which is connected with the main body of the left pubic bone by a mass of fibrous tissue several millimeters thick. In other words, it demonstrates that a movable fragment of bone had become interpolated between the symphysis pubis and the original bony section. At first glance, it appears surprising that such a condition



could persist without giving rise to pain or difficulty in locomotion; and furthermore, that having persisted the hyperemia incident to a renewed pregnancy should not have resulted in such softening of the fibrous tissue to have given rise to a definite enlargement of the superior strait.

Figs. 31 and 35 represent side and front views of the sacrum. In both it will be seen that the last lumbar vertebra is still attached to it, while the latter figure shows that the sacrum is made up of six

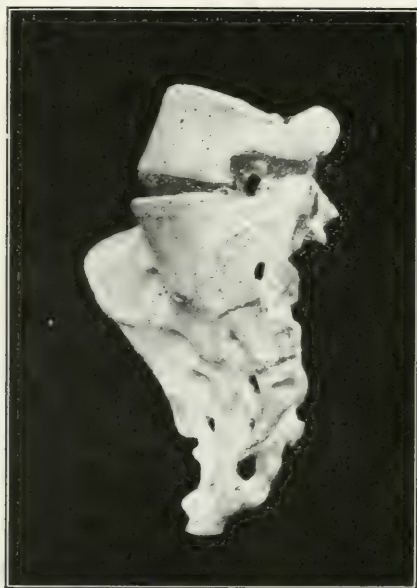


FIG. 31.—Pelvis 6. Generally contracted rhachitic assimilation pelvis. Sacrum seen from side  $\times \frac{1}{2}$ . Note absence of characteristic curvatures, presence of 6 vertebræ and that the first takes greatest part in forming the sacroiliac joint.

vertebræ but presents only four foramina on either side, and that the shape of the last vertebra is so characteristic that it must be interpreted as the assimilated first coccygeal vertebra. Owing to the presence of the additional vertebra, the sacrum has become relatively lengthened (9.5 to 9 cm.), so that its index is reduced to 105. In Fig. 31 it is seen that the vertical concavity of the sacrum is not increased, but that its lateral concavity is replaced by a convexity resulting from the projection of the bodies of its vertebræ beyond the alæ. The articular surface is participated in by three vertebræ, the first taking the most prominent part, which still further indicates that the assimilation is sacrococcygeal in character. From

the description and figures it is evident that the pelvis is characteristically rhachitic, and that the sacrococcygeal assimilation has in no way affected it, except by reducing the sacral index.

*Assimilation.*—It is apparent that in four of the five rhachitic pelves just described the sacrum is made up of six vertebræ instead of five. In other words, it presents the condition known as assimilation. Furthermore, it will also be found that the sacrum of pelvis VIII presents a similar abnormality. This means that assimilation was noted in five out of eight pelves picked up more or less at random—an incidence of 62.5 per cent., which of course must be regarded as excessively high, and as due to an accidental coincidence.

Figs. 32 to 36 represent front views of the sacra from pelves III, IV, V, VI and VIII, respectively, and give a clear idea of the conditions observed. But, before considering them in detail, it will be necessary to say a few words regarding assimilation in general.

Although anatomists have long recognized that assimilation represents one of the most common skeletal abnormalities, obstetricians have known very little about it, and it is in great part due to the extensive researches of Breus and Kolisko that its obstetrical significance has been appreciated. Schauta, Bayer, Sonntag, Hegar, Bachrach and others have written upon the subject, but their contributions have been inconsiderable when compared with those of the authors first mentioned. On the other hand, a large anatomical literature has developed which has shown that the abnormality is of unsuspectedly frequent occurrence, but unfortunately a consensus of opinion has not yet been reached regarding its significance or mode of production. It is interesting to note that the abnormality existed in the pelvis depicted as normal in Vesalius' great work, and that Welcker has pointed out that the sacrum of Philip Friedrich Meckel, the great anatomist of Halle, was likewise made up of six vertebræ.

By the term assimilation is understood the taking on by a vertebra of one portion of the column of characteristics of the portion immediately above or below it and its assimilation to the portion in question. We are interested primarily in assimilation between the lumbar, sacral and coccygeal regions, which normally represent the 20th to 24th, the 25th to 29th, and the 30th to the 34th vertebræ, respectively, when counted from above downward. Consequently, we have to deal with lumbosacral or sacrococcygeal assimilation, when a vertebra is added to or subtracted from the base or tip of the sacrum respectively.

It is apparent that when the sacrum consists of six pieces, the additional vertebra must be either the assimilated last lumbar or

the first coccygeal vertebra. In the first case we have to deal with lumbosacral assimilation, in which the last lumbar vertebra has become incorporated into the sacrum, which then consists of the 24th to the 29th vertebra. In the latter case, we have to deal with sacrococcygeal assimilation, when the first coccygeal vertebra has become fused with the sacrum, which is then made up of the 25th to the 30th vertebrae. On the other hand, assimilation may occur in the opposite sense, a sacral vertebra being added to either the lumbar or coccygeal column. In this event the sacrum will consist of only four vertebrae, while the lumbar or coccygeal column will be increased to six pieces.

From these considerations it is evident that perfectly definite statements concerning the character of the assimilation can be made only when the entire vertebral column is available, and the number of vertebrae composing its various regions can be accurately counted. When this is not possible only approximate statements can be made, although in general it is easier to recognize sacrococcygeal than lumbosacral assimilation.

Occasionally, the assimilation is imperfect, so that the fifth lumbar vertebra may present on one side an ala which is definitely fused with the sacrum and takes part in the formation of the corresponding sacroiliac joint; while on the other side it may present all gradations from a typical transverse process to an incompletely developed ala, whose free end does not take part in the sacroiliac joint. Still more rarely, more than six vertebrae may compose the sacrum, and Rosenberg, Dwight and Frets have described specimens in which seven vertebrae entered into its formation.

The statements of the anatomists concerning the frequency of assimilation vary greatly, certain authorities noting it seven times more frequently than others, as is shown by the following table:

Fischel observed assimilation in...	6.8 per cent. of	524 pelves.
Radlauer observed assimilation in..	15.0 per cent. of	500 pelves.
Emmons observed assimilation in..	21.7 per cent. of	217 pelves.
Paterson observed assimilation in..	38.2 per cent. of	265 pelves.
Frets observed assimilation in....	49.7 per cent. of	2472 pelves.

As it is impossible to give a satisfactory explanation for such discrepancies, all that can be said is that the abnormality is of common occurrence, and will be detected with increasing frequency when carefully looked for.

Assimilation occurs not only in man, but also in many of the lower animals and is especially frequent among anthropoid apes. It is interesting to note that the five examples in our series were all

obtained from negro women, and that Emmons' observations were made upon squaw pelves from numerous tribes of American Indians.

Before taking up the consideration of our specimens, it may be well to summarize the teachings of Breus and Kolisko concerning the effect of the abnormality upon the shape of the pelvis, from an obstetrical point of view. They point out that when the last sacral vertebra is assimilated to the sacrum—high assimilation—one of two things may happen, either the basis of the sacrum may maintain its normal width, while its promontory occupies an unusually high position, or the basis of the sacrum may be narrowed. In the first instance, conditions somewhat similar to those in lumbosacral kyphosis obtain and the entire sacrum becomes retropulsed, with the result that the conjugata vera is lengthened and the anteroposterior diameter of the outlet shortened, so that the pelvis becomes funnel shaped with an abnormally large and rounded superior strait. In the second case, the conjugata vera retains its usual dimensions, while the transverse diameter of the superior strait becomes shortened, giving rise to a transversely contracted pelvis. This contraction may remain practically limited to the superior strait, or may involve the entire pelvic canal and thus give rise to the pelvis canaliculé of the French writers.

In still other instances, as the result of variations in the sacroiliac joint incident to assimilation, the lower ends of the innominate bones become directed inward, while the superior strait maintains its usual dimensions, and thus is produced the typical funnel pelvis to which I have directed especial attention.

On the other hand, when the first coccygeal vertebra is assimilated to the sacrum, the abnormality is without obstetrical significance, as its only effect is to increase the length of the sacrum and thus lead to a decrease in its index; and even this does not always happen. Moreover, Breus and Kolisko further state that when the first sacral vertebra becomes assimilated to the lumbar column—low assimilation—a pelvis results which is very short in its posterior portion but is devoid of obstetrical significance. Finally, in asymmetrical assimilation, in which one side of the 24th vertebra has taken on sacral while the other side has retained lumbar characteristics, the effect upon the pelvis will vary according to the degree of implication of the two sacroiliac joints, so that it may remain normal, or become obliquely contracted as the result of scoliosis.

Although considerable discrepancy of opinion exists concerning the mode of origin and significance of assimilation, the prevailing



view is that which was first enunciated by Rosenberg of Utrecht in 1876 and elaborated by him in a number of subsequent publications. In the adult the sacrum normally consists of five vertebræ, which represent the 25th to 29th members of the vertebral column, while the alæ of the 25th, 26th and 27th vertebræ take part in the formation of the sacroiliac joint. According to Rosenberg, this does not represent the primitive arrangement; since in early embryonic life the upper limit of union between the sacrum and ilium is formed by the 26th vertebra. At that time the latter constitutes the 1st sacral vertebra, when the sacrum is composed of the 26th to the 30th vertebræ, while six presacral lumbar vertebræ lie above it. Later in development, however, the 25th vertebra becomes implicated in the joint and takes on definitely sacral characteristics, while at the same time the 30th vertebra becomes disassociated from the sacrum and forms the first coccygeal vertebra, thus giving rise to the typical adult condition.

In other words, Rosenberg believes that during development there is a tendency for the sacroiliac joint to advance upward, and thus to bring about a shortening of the proximal portion of the vertebral column. Support is lent to this theory by the fact that in the gibbon, and occasionally in man as well, a more primitive type of adult vertebral column occurs, whose lower part consists of six lumbar and five sacral vertebræ. Such observations correspond to the condition noted in the early embryo, and demonstrate the tendency toward shortening. Consequently Rosenberg regards high assimilation as an exaggeration of the normal process of shortening, in which the sacroiliac joint ascends beyond the usual level, when the 24th vertebra becomes assimilated to the sacrum. In this event, unless the 29th vertebra becomes disassociated from the sacrum and assimilated to the coccyx, the sacrum must inevitably consist of six vertebræ, and the number of presacral vertebra be reduced to four. On the other hand, in cases of low assimilation he merely assumes the persistence of the embryonic condition, when there will be six presacral and only four sacral vertebræ, unless an additional coccygeal vertebra becomes assimilated to the distal end of the sacrum. Accordingly Rosenberg regards high assimilation as the precursor of a futuristic type of vertebral column; whereas low assimilation represents an atavistic reversion.

These views, which have been accepted by Paterson, Keith and many other anatomists, are opposed by Holl and Bardeen, who hold that Rosenberg's embryological observations are incorrect and that the primitive union between sacrum and ilium always occurs at

the level of the 25th vertebra and not the 26th as Rosenberg believes, and consequently there is no anatomical basis for the assumption that there is a normal tendency toward shortening of the presacral portion of the vertebral column. I am not prepared to express an opinion upon the subject at this time, though I hope that in the future, work by some member of my department may serve to elucidate the subject.

Returning to the consideration of our five sacra, it must be admitted in the first place that only general statements can be made as to the types of assimilation which they represent, for the reason

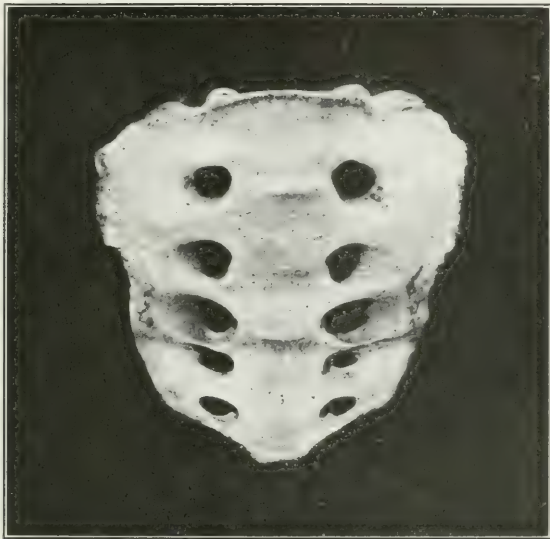


FIG. 32.—Front view sacrum III, showing lumbosacral assimilation  $\times \frac{1}{2}$ , from flat rhachitic assimilation pelvis shown in Figs. 15-19. Width 10; height 10 cm.; index 100.

that in no instance was the entire vertebral column available for study, and, consequently, the number of vertebræ making up its several portions could not be counted. Nevertheless it appears permissible to assume that the sacra from pelvises III, IV and V (Figs. 32, 33 and 34), are examples of lumbosacral assimilation for two reasons: First, that in all of them definite, if rudimentary, transverse processes project upward and backward beyond either ala of the first sacral vertebra, thus suggesting its lumbar origin. Second, that while the alæ of three vertebræ are involved in the formation of the auricular surface of the joint, those of the first occupy a smaller fraction of it than usual.

On the other hand, in sacra VI and VIII (Figs. 35 and 36) the fact that only four sacral foramina are present on either side, together with the characteristically coccygeal appearance of the 6th vertebra, makes it reasonably certain that we have to deal with sacrococcygeal assimilation. At the same time in sacrum VIII, the small part played by the first vertebra in the formation of the joint, the upward slant of the alæ toward the promontory, the high

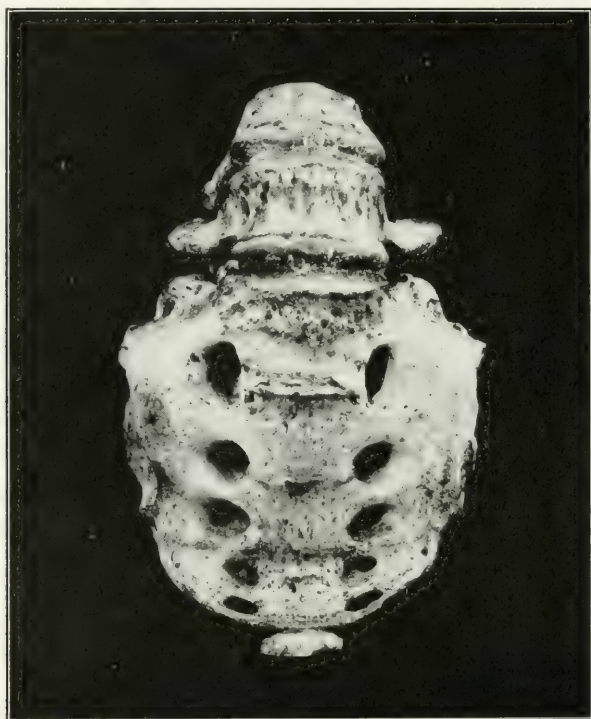


FIG. 33.—Front view of sacrum IV; showing lumbosacral assimilation  $\times \frac{1}{2}$ , from generally contracted rachitic assimilation pelvis shown in Figs. 19-22. Width 10, height 9.25 cm.; index 108.

position of the latter, and more particularly the rounded outline of the superior strait, as will be described below, speak strongly in favor of high assimilation, but unfortunately, the inability to count the number of presacral vertebræ renders it impossible to make a definite decision.

It will also be noted that in each specimen, except sacrum V, the presence of the sixth vertebra has led to an increase in length at the expense of width of the bone, with the result that the sacral index has fallen below the usual limit of 112 to 116. Thus, in sacrum

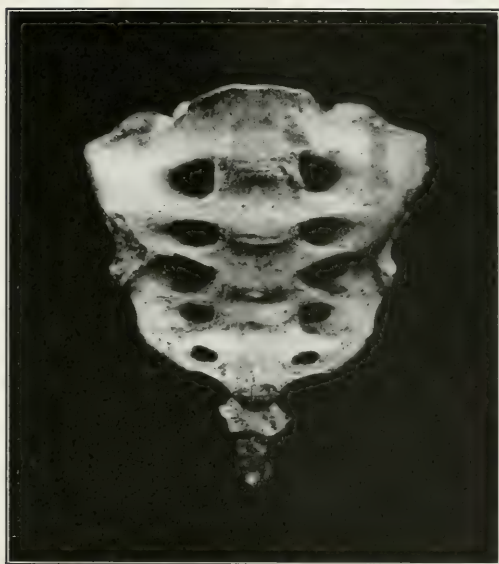


FIG. 34.—Front view of sacrum V, showing lumbosacral assimilation  $\times \frac{1}{2}$ , from generally contracted rhachitic assimilation pelvis shown in Figs. 23-26. Note vertical convexity of its anterior surface ("Mitten platt"). Width 10.5, height 9 cm., index 117.

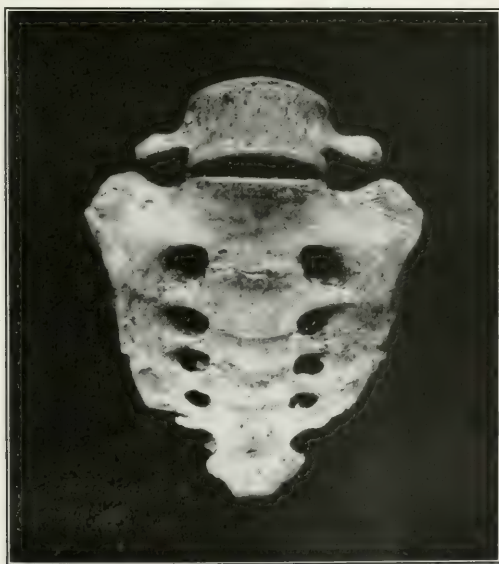


FIG. 35.—Front view of sacrum VI, showing sacrococcygeal assimilation  $\times \frac{1}{2}$ , from generally contracted rhachitic pelvis shown in Figs. 27-31. Note presence of last lumbar vertebra. Width 9.5 cm., height 9 cm.; index 105.



III, it is only 100, in sacrum IV, 108; in sacrum VI, 105 and in sacrum VIII, 84. In sacrum V, on the other hand, the normal index is preserved, which must be attributed to the fact that the vertical compression of the individual vertebræ is so pronounced that the height of the six does not exceed that normally noted when only five vertebræ are present.

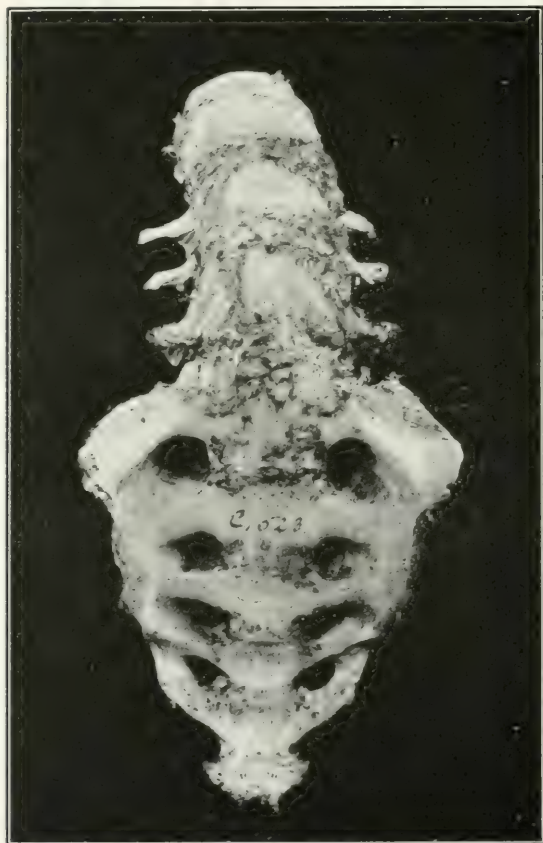


FIG. 36.—Front view of sacrum VIII, showing sacrococcygeal assimilation  $\times \frac{1}{2}$ , from generally contracted assimilation pelvis shown in Figs. 46–49. Note presence of  $3\frac{1}{2}$  lumbar vertebræ above it. Width 10.5, height 12.5 cm., index 84.

As will be stated more in detail, when pelvis VIII is considered, the presence of assimilation has not led to the production of the characteristic pelvic changes described by Breus and Kolisko, except in pelvis VIII. Consequently, it is evident that their conclusions are not of universal application, so that the question arises as to whether the coexistence of rachitic changes with the

high assimilation in pelves III, IV and V, has served to neutralize the effect of the latter. I am not prepared to answer the question, but the facts here noted serve in a way to emphasize the belief of Hegar that Breus and Kolisko generalized somewhat too freely when they set up the several varieties of assimilation pelvis described above as definite types of pelvic contraction.

Reference has already been made to the fact that in each of our five sacra three vertebræ were involved in the formation of the sacroiliac joint. Derry has expressed the belief that in the female this is always a manifestation of assimilation; as he holds that only two vertebræ are normally involved, as compared with two and a half or three in the male. Study of the three non-assimilated sacra of our series clearly shows that he is in error; as only in pelvis VII are two vertebræ involved, while in pelves I and II three clearly take part in forming the joint (Figs. 9 and 14).

VII. *Spondylolisthetic Pelvis* (pelvis 33, history 261). This pelvis was obtained at autopsy upon a twenty-two-year-old colored girl who died seven days after a symphyseotomy performed by one of my residents, and was described in detail in 1889 in vol. XL of AMERICAN JOURNAL OF OBSTETRICS.

Figs. 37 and 38 represent the pelvis with the superior strait in the normal and vertical inclinations respectively. Both show that the upper part of the pelvis is practically normal, except for the fact that the vertebral column has prolapsed into and mechanically obstructed its cavity. In Fig. 37 it is seen that the upper surface of the third lumbar vertebra looks directly forward, which would imply that the rest of the lumbar column had extended horizontally. This would necessitate the patient going upon "all fours;" but, as Fig. 43 shows that she walked upright, it is apparent that the pelvic inclination must have been radically altered during life. This question will be considered in greater detail in connection with the next specimen.

Fig. 39 shows that as a result of retropulsion of the base of the sacrum, the pelvis outlet has become transversely contracted, though not sufficiently so to be designated as a funnel pelvis. The figure also gives a good idea of the extent to which the vertebral column has prolapsed into the pelvic cavity.

Fig. 40, representing a side view of the sacrum, shows that only two vertebræ enter into the formation of the sacroiliac joint, and that while the spine of the last lumbar vertebra retains its normal position, those of the third and fourth vertebræ have become displaced forward.

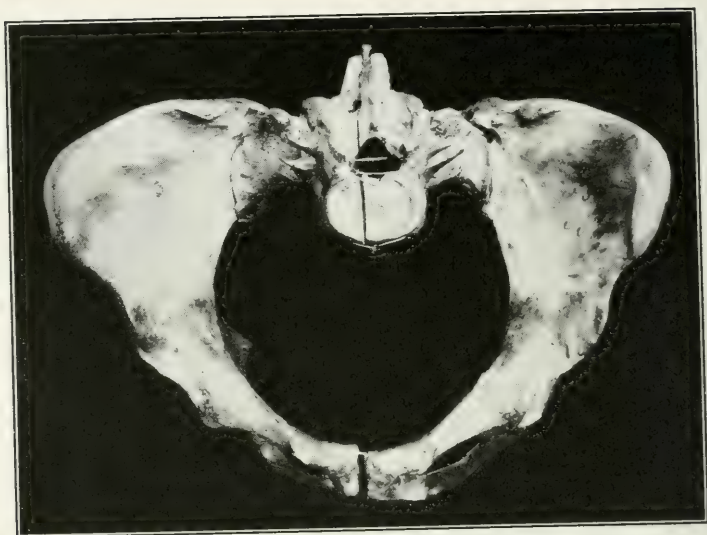


FIG. 37.—Pelvis 7. Spondylolisthetic pelvis, normal inclination  $\times \frac{1}{3}$ . Spines 24, crests 25.25 cm.; sup. strait: pseudo c.v. 8, trans. 12.75, obq. 11.75 cm. Terminal length 19.25: 7, 7, 5.24 cm.

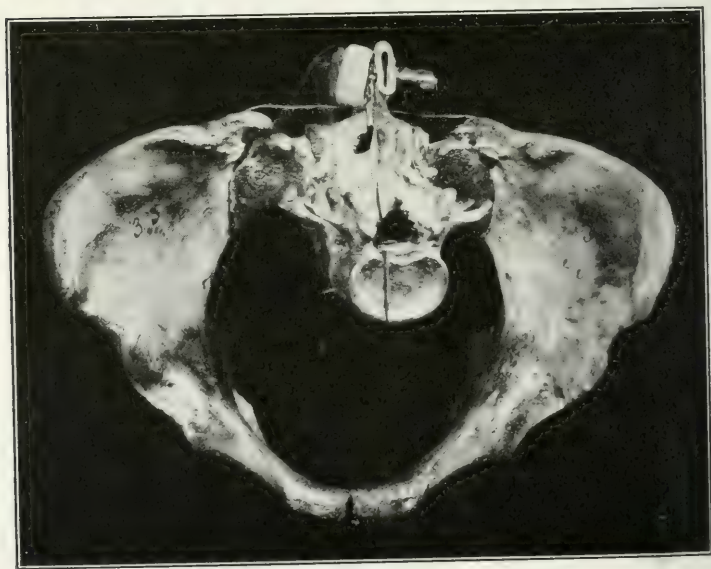


FIG. 38.—Same pelvis, vertical inclination.

Figs. 41, 42 and 43 have been reproduced from my original article. The first shows the extent to which the body of the last lumbar vertebra has slipped forward over the promontory of the sacrum and gives an idea of the resulting destruction of bony tissue.

Fig. 42 shows the normal fourth lumbar vertebra, and below it the fifth vertebra, with the marked elongation of its interarticular portion (spondylolysis) which has made possible the slipping forward of its body over the promontory of the sacrum.

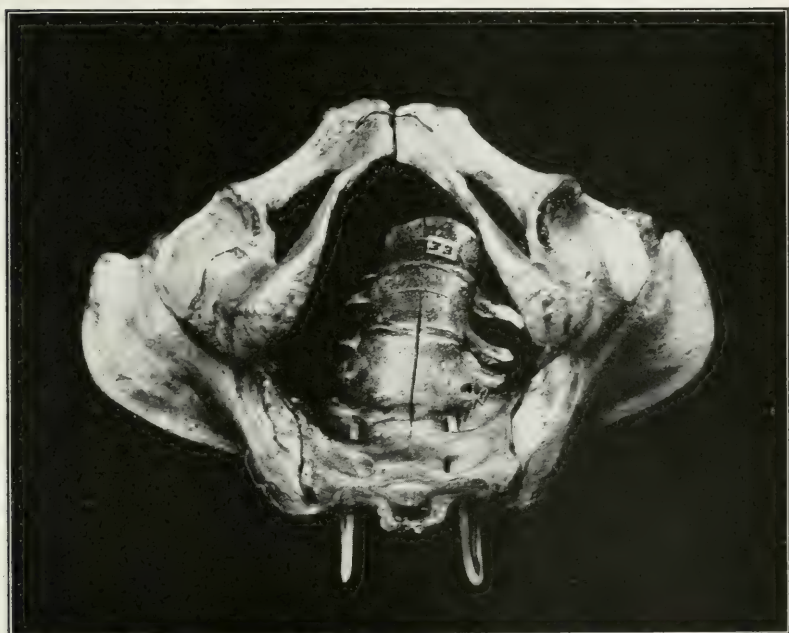


FIG. 39.—Pelvis 7. Spondylolisthetic pelvis, outlet  $\times \frac{1}{3}$ . Ant. post. 11.75 cm., trans. 9.5 cm.

Fig. 43 is reproduced in order to show that the patient stood upright, and that the spinous process of the last lumbar vertebra gave rise to a visible external projection. These facts will be utilized in discussing changes in the pelvic inclination in connection with the next specimen.

VIII. *Generally Contracted Assimilation Pelvis*, associated with dorsal kyphoscoliosis (pelvis 1523, history 8603). This pelvis was obtained at autopsy upon a twenty-eight-year-old colored woman who died from tuberculosis thirty-two days after a Porro Cesarean section. Anatomical diagnosis: "Tubercular bronchial and medi-



astinal lymphadenitis, disseminated tubercles of the viscera, hydro-pericardium, hydrothorax, ascites, anasarca, pulmonary atelectasis."

The illegitimately pregnant patient, who had repeatedly been a charge upon public charity, entered the service early in pregnancy in an emaciated and highly deformed condition. In addition to a pronounced kyphoscoliosis in the dorsal region, she walked with great difficulty as the result of double sided paralysis of the legs,

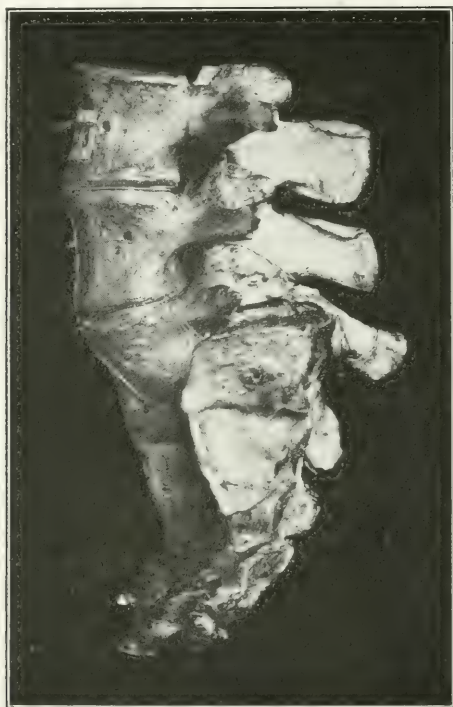


FIG. 40.—Pelvis 7. Spondylolisthetic pelvis, side view of sacrum and last three lumbar vertebræ  $\times \frac{1}{2}$ . Width 10.25; height 8.25 cm.; index 117.

following infantile paralysis, which had only been partially compensated for by two tenotomies (Fig. 44). The body weight was in great part carried by the left leg, so that the left trochanter and iliac crest were 5 cm. higher than the right. A clinical diagnosis of an obliquely and generally contracted funnel pelvis, associated with dorsal kyphoscoliosis was made, and the patient kept under observation. It was then noted that she sat and walked but little, and when out of bed supported herself upon her elbows as shown in Fig. 45, from which it is apparent that the

lumbar and sacral regions tended to become almost horizontal. In May she had an attack of preëclamptic toxemia, from which she recovered after rest in bed and a milk diet.

On June 10, 1917, Cesarean section was done followed by supra-vaginal hysterectomy, and after an uneventful recovery the patient left the hospital on the nineteenth day. The following note in the history explains the apparently radical treatment: "In view of the great deformity and the generally poor physical condition of the

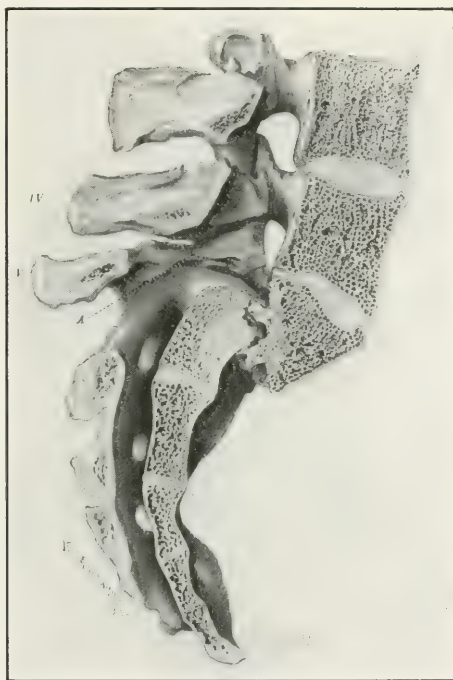


FIG. 41.—Pelvis 7. Vertical mesial section through Fig. 40 to show dislocation of body and normal position of spinous process of last lumbar process  $\times \frac{1}{2}$ .

patient, and with the desire to save her the recurrent strain of menstruation, it was decided to amputate the body of the uterus, rather than to produce sterility by resection of the tubes." Eleven days after discharge, the patient was readmitted to the service and died two days later, when the anatomical diagnosis quoted above was recorded.

Figs. 46 and 47 show the pelvis in the normal and vertical inclinations with three and a half lumbar vertebræ still attached. One is immediately impressed by the almost circular outline of the superior

strait, whose diameters present the following measurements, conjugata vera 10, transverse 11, and oblique 11 cm. Consequently, as soon as it was noted that the sacrum was made up of six vertebræ, as shown in Fig. 36, and that the anterior margins of the alæ of its first vertebra extended obliquely upward toward the promontory, instead of horizontally as usual, one's first tendency was to follow Breus and Kolisko and to classify the specimen as a transversely contracted high assimilation pelvis; but further study led me to change the diagnosis to the one given above.

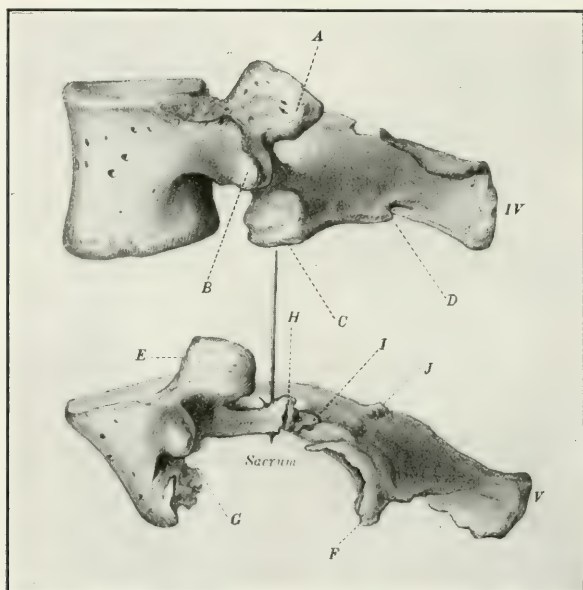


FIG. 42.—Pelvis 7. Side view of 4th and 5th lumbar vertebræ  $\times \frac{1}{2}$  to show lengthening of interarticular portion of latter.

It is evident from the normal curve of the iliac crests, and the normal measurement of the iliac portion of the terminal length that rickets was not an etiological factor. Furthermore, the pictures show that the pelvis is unusually delicate in structure, and this impression was confirmed upon handling it, when it was found to weigh only about one-half as much as usual.

Fig. 48, representing the pelvic outlet, shows that the pubic arch is angular, and that the anteroposterior and transverse diameters are reduced to 10 and 9.5 cm., respectively.

Figs. 36 and 49, representing the front and side views of the sacrum, show that it is made up of six vertebra and is unusually

delicately formed. It measures 10.5 cm. in width and 12.5 cm. in length, is therefore markedly dolichohieric in shape, and presents the unusually low index of 84. It is apparent that its unusual narrowness has given rise to the transverse contraction of the entire

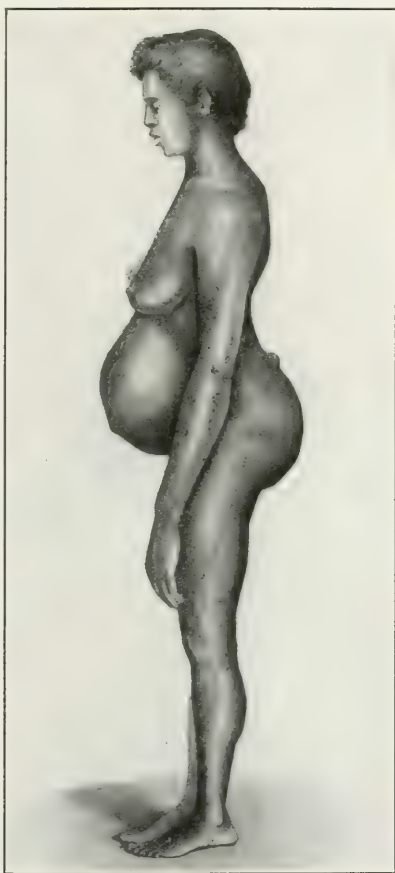


FIG. 43.—Pelvis 7. Side view of spondylolisthetic patient, showing erect posture in spite of altered pelvic inclination and protruding spinous process of last lumbar vertebra.

pelvic canal, which, together with the normal length of the iliac portion of the terminal length, are the chief factors concerned in the production of the strikingly rounded outline of the superior strait.

As was stated on page 742, only four sacral foramina are present, while the characteristic shape of the sixth vertebra indicates that it



represents the assimilated first coccygeal vertebra, at least so far as conclusions are permissible in the absence of the rest of the vertebral column.

From Fig. 49 it is apparent that three vertebræ take part in the formation of the sacroiliac joint, whose superficies is unusually small and delicately shaped, and in marked contrast to that observed in other pelves of the series, and particularly to that in pelvis VII. Indeed, it appears to be so delicate that it seems scarcely adapted to serve the usual purposes of the joint, and this assumption is strengthened by noting on either side of the dorsal surface of the bone, just



FIG. 44.—Pelvis 8. Side view of patient showing high kyphoscoliosis.

above the joint, a shallow oval depression,  $3.5 \times 2$  cm.—indicated by the “X” mark in Fig. 49. Corresponding to these depressions, each innominate bone bears upon its inner surface, just posterior to the sacroiliac joint, a smooth rounded protuberance which accurately fits into them. Although not noted until maceration was complete, and after the opportunity had passed for ascertaining whether the prominences and depressions were covered by synovial membranes, one is practically forced to the conclusion that they represent accessory joints, which had developed as a result of the faulty development of the sacroiliac joints and of the abnormal attitude assumed by the patient, and that they served in a way to

suspend the pelvic girdle from the posterior surface of the sacrum. Still further evidence that such was their function is afforded by the fact that Luschka, Dwight and Radlauer have described similar accessory joints.

From what has already been said it is apparent that, while the sacrum presents indubitable evidence of sacrococcygeal assimilation, it is not permissible to describe the specimen as a high assimilation pelvis giving rise to transverse contraction. Consequently,



FIG. 45.—Pelvis 8. Side view of same patient in position of rest. Note horizontal position of sacral region.

we are forced to conclude that the condition has resulted from defective general development, and that the sacrococcygeal assimilation is to be regarded merely as an accidental coincidence; although, of course, it is possible had the entire vertebral column been at our disposal that some other conclusion might have been reached. I am, however, free to confess that the interpretation of the nature

of the pelvis was very difficult and, as indicated above, I for some time regarded it as a typical example of high assimilation. Considerations of this kind indicate that Hegar was probably correct when he contended that in many instances the pelvic deformity, which is regarded as the result of assimilation, is in reality due to the imperfect development of a pelvis in which the existence of assimilation is a mere coincidence.

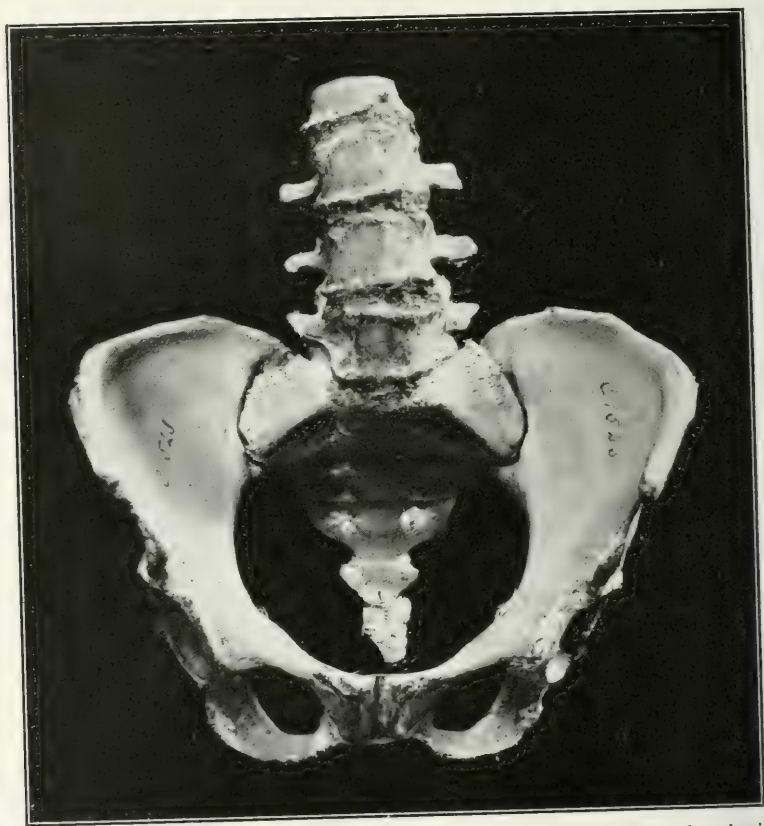


FIG. 46.—Pelvis 8. Generally contracted assimilation pelvis, associated with dorsal kyphoscoliosis, normal inclination  $\times \frac{1}{3}$ . Spines 21, crests 23.5; sup. strait: c.v. 10, trans. 11, obq. 11 cm. Terminal length 17.5 cm.: 6.5, 6 and 5 cm.

The pelvis is also of interest for the reason that the high dorsal kyphosis had been fully compensated for by a pronounced lumbar lordosis, and consequently had no effect upon the shape of the pelvis, and fully confirms our current views in that regard. Furthermore, it is noteworthy that the scoliosis with its convexity to the right, and the definite tilting of the pelvis to the left failed to give rise to

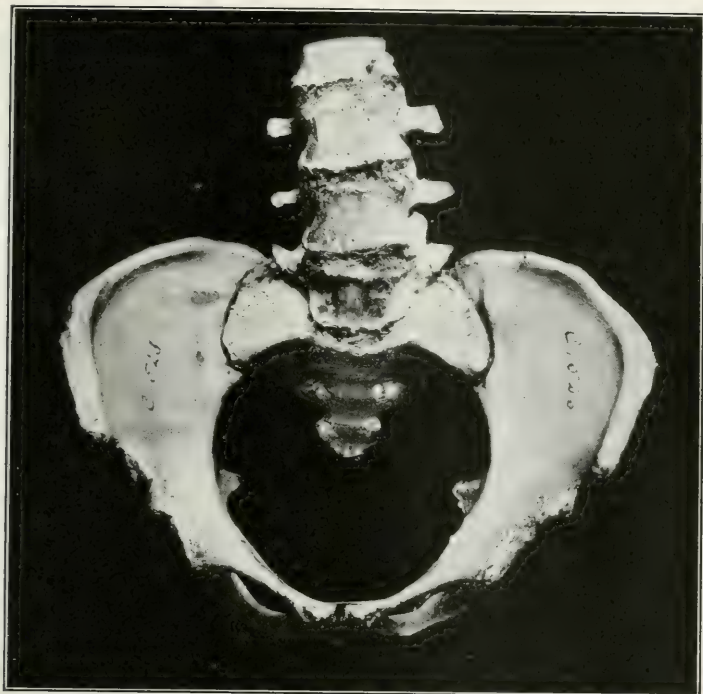


FIG. 47.—Same pelvis, vertical inclination.

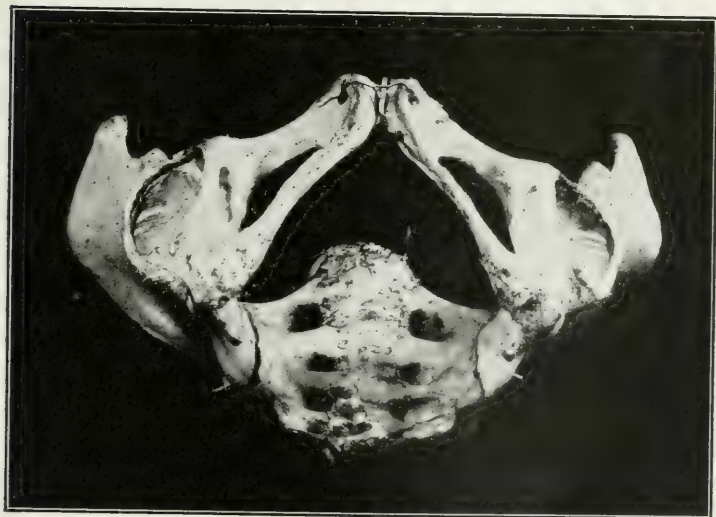


FIG. 48.—Pelvis 8. Outlet  $\times \frac{1}{3}$ . Ant. post. 10 cm., trans. 9.5 cm.



the obliquity of the pelvic canal, which might well have resulted from it.

Pelves VII and VIII are also of interest on account of the information they afford concerning variations in the pelvic inclination. In considering the spondylolisthetic pelvis (VII), attention was directed to the fact that when it is held at the normal inclination of 55 or 60 degrees the superior surface of the third lumbar vertebra looks directly forward, so that it is apparent if the patient were not to walk upon "all fours" that the pelvis must be so tilted as to

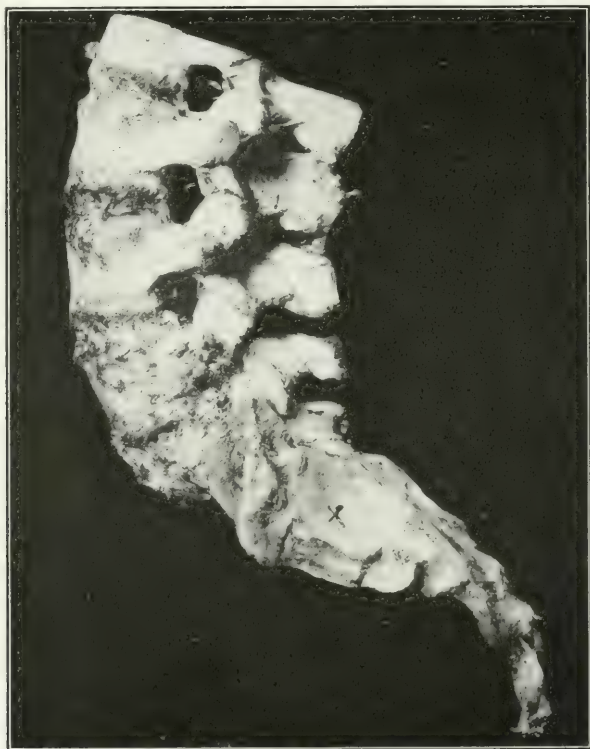


FIG. 49.—Pelvis 8. Side view of sacrum and lower lumbar vertebræ  $\times \frac{1}{2}$ . Note delicate structure of sacroiliac joint, as well as presence of accessory joint above it (Marked X).

enable the vertebral column to assume a more or less vertical position. This necessarily involves a rotation through the greater part of 90 degrees, and therefore means in order for the patient to assume the upright position, shown in Fig. 43, that the pelvic inclination must become partially reversed, in other words, that the symphysis pubis must occupy a higher level than the promontory of the sacrum.

Such a change would involve a pronounced alteration in the center of gravity, and an unusual degree of tension of the iliofemoral ligaments and of the muscles of the thighs. That both of these occurred is shown by the fact that the patient walked in very unstable equilibrium and would fall whenever she carried a weight in front of herself, as well as by the fact that the portions of the anterior wall of the pelvis which served for the attachment of the muscles and ligaments in question were greatly hypertrophied and roughened.

In pelvis No. VIII, on the other hand, the conditions were reversed, and a glance at Figs. 44, 45 and 49 suffices to demonstrate that the pelvic inclination had become so accentuated that the plane of the superior strait was practically perpendicular to the horizon.

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## A NEW OPERATION FOR PROLAPSE OF THE UTERUS.\*

BY

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Chicago, Ill.

(With seven illustrations.)

HELMHOLTZ once said that the eye was a shamefully poorly constructed apparatus. The same accusation might be made with even greater apparent reason against the female sexual tract. Every one of its essential functions is associated with hemorrhage and loss or separation of continuity of tissue. Ovulation, menstruation, coition, labor, all are combined with varying degrees of bleeding and tearing, the normal amount of which is separated by uncertain margins from tragic excesses. Shamefully poor construction indeed, so poor that the regularity and precision with which the functions of this apparatus proceed in the overwhelming majority of cases never ceases to excite the wonder and admiration of the

\* Read at a meeting of the New York Obstetrical Society, January 8, 1918.

thinking observer. At the same time our colossal ignorance regarding the essence, not to say the purpose of so many of these functions, menstruation, its rhythm and its connection with ovulation, the mechanism of conception and nidation, the regulation of the duration of pregnancy and its termination and other riddles, may well cause us to admire rather than to deprecate and especially to investigate rather than to criticize.

Our surgical achievements in the field of gynecology have in many respects been superior to our theoretical knowledge. Our operations for tumors and for the consequences of infection are saving thousands of lives and our plastic, constructive and reconstructive work in congenital and acquired occlusions, in fistulas and certain cases of sterility are as wonderful as those which make the blind see and the lame walk.

In prolapse of the uterus and the vagina our results can be characterized only as fair. For the more thoroughly we operate and cure the prolapse, the more we unfit the female sexual tract for its supreme function, that of child-bearing. I have tried to comfort my students by pointing out that we should not be asked to build better than the Creator did and he certainly did build woman so that lacerations are the universal accompaniment of child-bearing. To a lesser degree it is comforting to remember that the majority of large prolapses occur in old persons past the age of child-bearing or in women who have done their bit toward the population of the earth. But all this does not relieve us from the desire to do something for those unfortunates who, be it through congenital defect or more often in consequence of mismanagement of labor, have become the victims of prolapse in early years.

The operative treatment of prolapse has been the mirror of our knowledge of pelvic anatomy and pathology. The early operators did not look beyond the tears in perineum and vagina. They believed that repairing and tightening the vaginal tube would be sufficient. The results, however, were not brilliant and this kind of more or less ornamental primitive architecture is now abandoned. It is successful in inverse ratio to the extent of the prolapse.

The underlying causes of extensive prolapse have been found in deeper structures of the pelvis. While some authors consider the retention of the uterus in a normal position a function of its ligaments, others emphasize the importance of muscles and fasciæ. In modern gynecology we are, therefore, no longer satisfied with a diagnosis of prolapse of first, second or third degree. In fact this old terminology is pretty generally abandoned. In the modern



study of a case of prolapse we investigate, one after the other, all of the structures of the pelvis involved, including bladder and rectum.

Better information concerning the structures injured has led to a realization of the fact that prolapse is not a uniform pathologic condition, but a varying sum of varying individual defects brought about by the great variety of obstetrical injuries due to varying modalities of natural and especially artificial labor.

The result for the operative technic has been firstly, an increasing multiplicity of individual steps making up the sum total of a prolapse operation, and secondly, a progressive advance toward the deeper structures of the pelvis. Where formerly the operations on the vaginal tube constituted the essence, they now amount to barely more than incisions of some shape for the purpose of gaining access to the deeper structures. And these incisions are very little discussed nowadays, our only aim being to trace them so that their suture will not lead to awkward prominences or folds.

Our results have been the more satisfactory the closer we have been able to imitate natural conditions. The treatment of the rectocele by levator suture is the clearest exemplification of this principle. It restores detached or torn or atrophied muscles to as near their natural condition as possible. It is, therefore, universally practised and gives most excellent results by a simple and typical method.

The levator suture is insufficient in those cases of congenital deep cul-de-sac, the true congenital posterior vaginal hernias. In the course of the abdominal part of prolapse operations I have repeatedly been able to demonstrate that the peritoneum may reach clear to the perineum, so that rectum and vagina are entirely separated. Also I have learned to diagnose these cases before operation. Of course, when the pouch of peritoneum contains bowel in the typical hernia fashion, it can be diagnosed, but I have never seen such an extensive case. I diagnose them now by introducing one finger into the rectum and taking hold of the protruding vaginal wall with the other hand. When now the vaginal wall is pulled upon, the rectal wall does not follow in these cases as it does in simple rectocele.

The treatment of these cases I find difficult. I have attempted to obliterate the abnormally deep cul-de-sac by purse-string sutures placed from the abdomen, which must, of course, carefully avoid penetration of the anterior rectal wall. Another method I have tried is to denude the posterior vaginal wall as far as possible of its peritoneal investment and to suture the now raw posterior surface

of the posterior vaginal wall to the rectum. I have used the same principle operating through the vagina and have opened into the cul-de-sac by splitting the posterior vaginal wall. But I find it more difficult to attach the vagina high up on the rectum in this way than after laparotomy. Lastly I have attempted to treat the deep cul-de-sac in the identical way in which we treat a hernial sac in other regions, by extirpating it. The difficulty has usually been with the peritoneum of the anterior wall of the rectum which does not come off easily. I have been successful with this method whether I attacked the sac through the split posterior vaginal wall or from above. This last method is the one I now carry out in all of these cases. Though it may be a little more difficult through the abdomen to reach the bottom of the hernial peritoneum, it is easier to hold the vagina up for the sutures which must attach the vagina higher up on the rectum.

We have all read of or seen cases of prolapse which have returned again and again. There are reports of twelve, even eighteen operations in succession on the same prolapse. It may have been accident, but all the patients I have seen who have had more than two or three operations for prolapse before they came to me, were such cases of congenital deep cul-de-sac. One of them was a young woman of twenty-five who had had her first operation at the age of fifteen and who had never had a child.

The treatment of the next feature of the prolapse, the downward dislocation of the uterus has been along lines as far removed from the imitation of the natural conditions as can be imagined. In fact, the more remote from natural conditions, the more successfully the position brought about by these operations has been maintained. A uterus sutured and healed to or into the abdominal wall or even extruded through it, entire or split, is not liable to come down again. Such methods are entirely out of the question where a subsequent pregnancy is even a possibility. In cases in which the possibility of future pregnancies is retained, I denude a strip about 1 inch wide and extending from the fundus of the uterus down into the vesicouterine pouch and up on the bladder and then fold the uterus on the bladder and retain it there by sutures. Also I add another feature which we shall discuss under the head of cystocele. I have had an opportunity to see the outcome of such an operation after a subsequent labor. This patient had a suppuration of the median incision which I had used in her case. She became pregnant soon after her operation, passed through a normal pregnancy and labor and I had to operate on her ventral hernia some months after labor.

I found the uterus in position and the bladder attached in the median line almost up to the fundus of the uterus in the same way in which we often see it when we operate for inflammatory conditions.

In extensive prolapse the most serious difficulty has always been the retention of the cystocele. Even if the uterus itself was well held up by some ventral fixation, the cystocele by itself was liable to reappear. There really was no good and reliable method for the cure of this trouble, particularly not when the possibility of conception was to be preserved. The incontinence and pollakiuria and the bearing down sensation which accompany cystocele caused me to pay special attention to this feature.

The literature states that with the descensus of the bladder the internal meatus of the urethra is liable to become insufficient, but some other features which I found on further investigation were not previously described as far as I could see or not paid attention to in operations.

I found in extensive prolapse that the trigone which normally is located in front of the anterior fornix of the vagina had sunk down to a considerable extent and that the part of the bladder wall which was attached to the anterior vaginal wall was a much higher part of the bladder than the trigone. The entire posterior wall of the bladder had become detached from the upper vagina and become attached lower down. Tandler and Halban's atlas showed that perfectly though the authors place no stress on this point. It was evident that here we had to deal with a type of obstetrical injury which could not be explained on the basis of tear either of ligaments or of muscles or by any longitudinal tear of the vagina. This condition could only be the consequence of a sliding detachment of the bladder from the vagina. Now we have all seen the vagina protrude into, or even outside, the vulva after labor, but nobody seems to have considered that a special type of injury with the one exception of Schatz who in 1903 wrote a paper on this subject, which however seems to have found very little consideration. It appears clear to me that with the descending head and particularly when the head was made to descend with forceps before the vagina was sufficiently dilated, the vagina in these cases has been pulled down and stripped off from the bladder. The bladder then healed into faulty position. I have modified the prolapse operation with especial regard to this point.

There are three other conditions associated with this one.

Firstly, in all cases of prolapse we find the anterior vaginal fornix obliterated, in other words the vagina which had been attached to

the anterior cervical surface to the extent of the normal anterior fornix has become detached so that it leaves the cervix in a downward course at a very short distance from the external orifice of the uterus. I have modified the prolapse operation with especial regard to this point.

Secondly, and this condition has been mentioned by other authors, the attachment of the posterior wall of the bladder to the anterior wall of the uterus has become lower. We see that in opening the peritoneum in vaginal celiotomy on every woman with more or less prolapse. Tandler and Halban's atlas also shows this condition on anatomical specimens. It is known that this can go so far that the peritoneum can come into direct contact with the vaginal wall in front of the uterus. I have modified the prolapse operation with special regard to this point.

Thirdly, in opening the abdomen in cases of extensive prolapse, I have found now and then, but not always, that the posterior surface of the symphysis was bare, that the bladder had sunk away from it. Again Tandler and Halban as well as Ed. Martin show this condition plainly and give anatomic confirmation of the clinical observation. However neither one of these authors pay special attention to this point. Where found present this defect is attacked in my modification of the prolapse operation.

Wherever examination shows the presence of these anatomic changes, I now aim to remedy them by special steps in the operation, which are utilized as and if needed. I aim to tighten the dilated urethra, I replace the slipped down bladder, I reform the anterior fornix of the vagina, I place the posterior bladder wall higher up on the anterior wall of the uterus and I give the anterior wall of the bladder special attachment where needed.

It may be asked whether the interposition operation does not fulfil all of these requirements. I do not find it so. I have seen rather frequent partial recurrences after the interposition operation. The interposed uterus is very liable to become very atrophic and then does not hold the anterior vaginal wall at all well, so that cystocele as well as prolapse of the uterus itself by rotation of the cervix downward can result.

As a matter of minor importance I may add that in cases of extensive enlargement of the cervix amputation of the cervix is practised.

Where the cervix in consequence of prolonged contact with the clothes, etc. has become ulcerated, I prefer to subject the patient to a week's preparatory treatment by rest in bed and cleanliness



rather than risk infection of the operative wounds by operating in the presence of an ulcerated cervix.

Women who have not reached the menopause are consulted as to their wishes concerning further pregnancies. If they have sufficient offspring and the husband consents as well as the wife and both have signed a statement to this effect, she is sterilized in the course of the abdominal operation. None of the patients sterilized in this manner have become pregnant.

We have used scopolamine-morphine anesthesia since 1905 and add ether or gas-oxygen whenever needed. Considerable portions of the operation can always be performed with scopolamine-morphine alone.

I have developed the operation since 1910 and have performed considerably over one hundred of them. One patient died about a week after the operation, while I was away on a vacation and I am unable to say what exactly caused the death. There was no post-mortem.

I have seen one recurrence in a diabetic patient, who had suppuration of the vaginal wound. Of course, where suppuration prevents the healing of the wound, recurrence is just as likely as after a hernia operation with suppuration. I wish to state specifically that I have reexamined a large number of the patients, but not all, as many of them have come from distant States.

#### TECHNIC OF THE OPERATION.

The various steps of the operation, all or any of which are used according to the findings, are as follows, assuming a case of a mother of a number of children who does not insist on further offspring:

Disinfection of the vagina with lysol solution, of the external skin with iodine or acetone alcohol. The bladder is catheterized. The cervix is pulled down, a volsellum is placed just below the external meatus, one far out on each side of the vagina. A piece of vagina the size of which depends on the amount of redundant vaginal tissue is dissected off (Fig. 1). The edges of the vagina are then lifted up and dissected farther away from the bladder so that the lateral attachments of the bladder are freed. Then the ligamenta pubovesicalia, where distinct, are separated from the bladder a short distance and the bladder is pushed away from the uterus clear up to the peritoneum, but the peritoneum is not opened. Now the first sutures unite the ligamenta pubovesicalia below the bladder where they are well pronounced. The next line of continuous sutures grasps the vaginal wall and where the urethra

is not firmly fixed, the urethra. At the end of the urethra this suture is tied. From there on a continuous suture unites vaginal

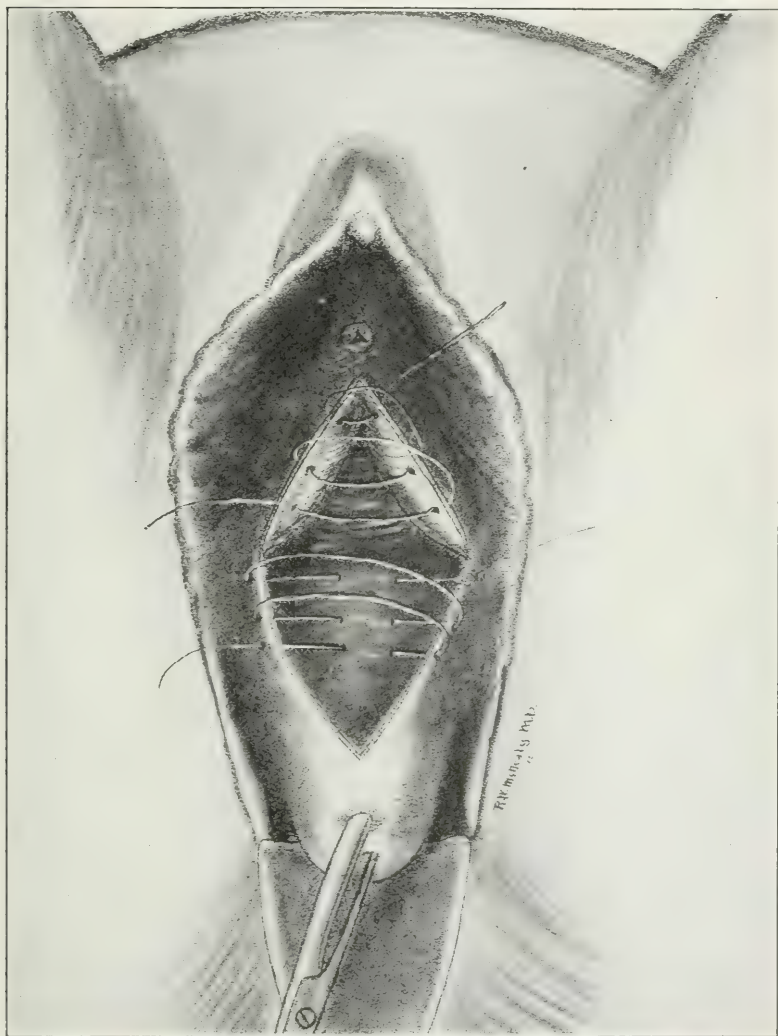


FIG. 1.—Shows the shape of the denudation. The edges of the incision have been dissected further from the underlying tissue. The bladder has been pushed back. The two first continuous sutures have been inserted, but not tied. The upper suture takes in the vaginal wall only, the lower takes hold of vagina and cervix. The figure shows the sutures diagrammatically, in the actual operation the first suture is tied before the second is started.

wall and fastens it at the same time to the cervix so that a deep anterior fornix of the vagina is created. Coming close to the lower

end of the cervix the line of incision is drawn into a transverse line and the suture made across the cervix (Fig. 2).

This finishes the work on cervix, urethra and anterior vaginal wall. Each step can be made as extensive as necessary in an

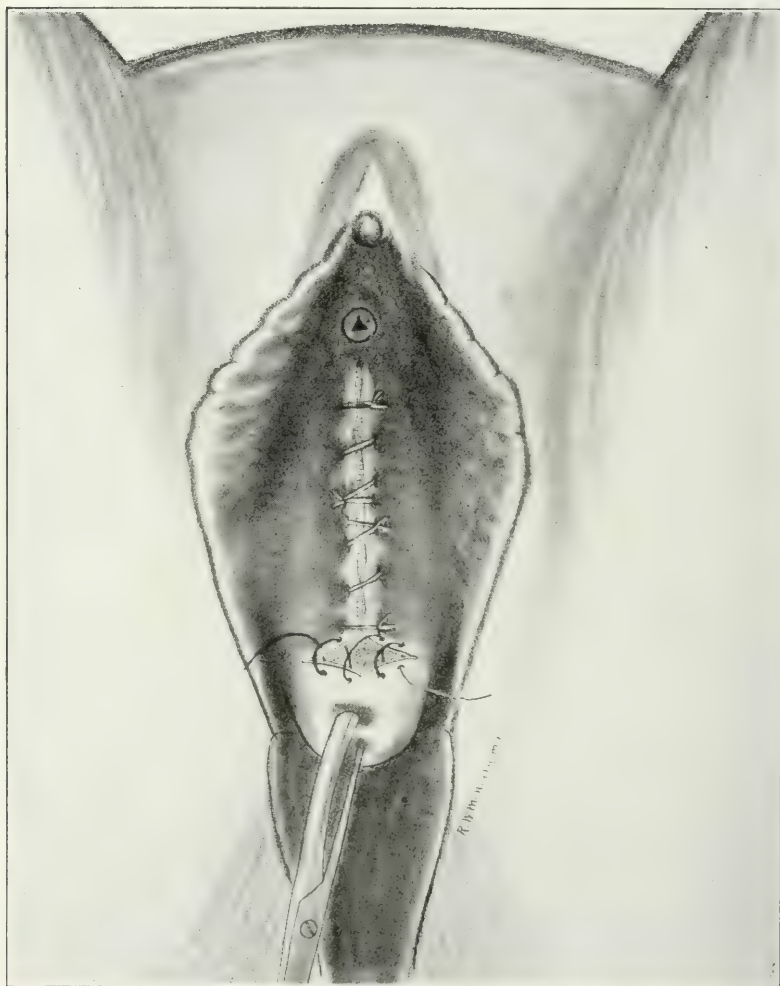


FIG. 2.—Shows the first two sutures tied and the lower part of the vaginal edge drawn toward both sides, so as to change the median incision into a transverse one.

individual case. The bladder has not been sutured so far at all and it lies temporarily above the anterior fornix of the vagina and any oozing from it will accumulate in this space between the peri-

toneum above and the vagina below. As there may be considerable oozing we aim to lose no time from now on.

The operation for the rectocele is now begun with a Hegar triangular denudation, the rectum is separated from the vagina as far as necessary and by blunt dissection the levator muscle is laid bare

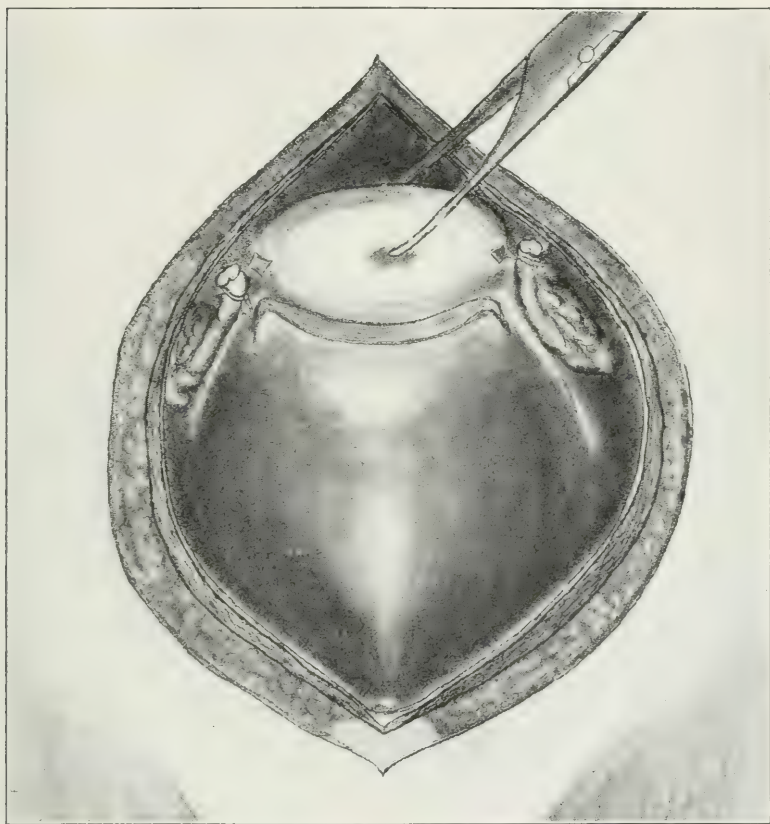


FIG. 3.—Shows the abdomen opened in the median line. The uterus is held up by a volsellum. The "blue spot" is seen as a protrusion just in front of the body of the uterus. The peritoneum of the vesico-uterine pouch is incised transversely. The uterine ends of both tubes are shown cut out of the uterine horns and tied.

on both sides. I sometimes demonstrate that I have the levator by pulling on it after it is laid bare. The attachment of the pubo-coccygeus behind the anus causes the posterior circumference of the anus to move if the freed levator is pulled upon. Three or four sutures unite the edges of the levator. Then a point as much below the apex of the triangle as necessary in each case is pulled up and a



suture made which distorts the upper end of the triangle into a two pronged suture line, the two prongs lying in the posterior sulci of the vagina. I do that because, if the edges of the triangle are simply sutured in the median line, a prominence at the upper

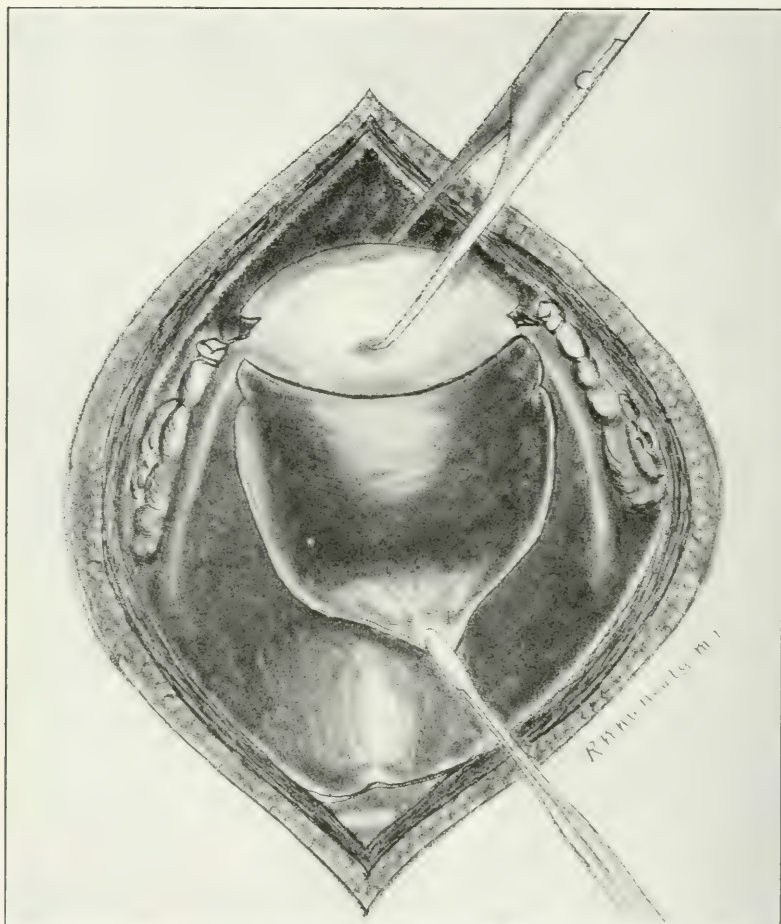


FIG. 4.—Shows the flap of peritoneum lifted away from the uterus exposing the anterior aspect of the cervix and body of the uterus.

end is liable to result which is undesirable. The rest of the perineal plastic is done in the usual way. Skin sutures are made with celluloid linen, everything else with plain catgut. The perineum is covered with vaseline as the only dressing.

The skin of the abdomen of the patient is now disinfected with

acetone alcohol for two minutes. The patient is placed in the Trendelenburg position.

A Pfannenstiel transverse fascial incision is made in most cases. Where a previous laparotomy has been done at some other time, I use the old laparotomy incision as it frequently requires repair of more or less extensive hernias. As soon as the muscles are split

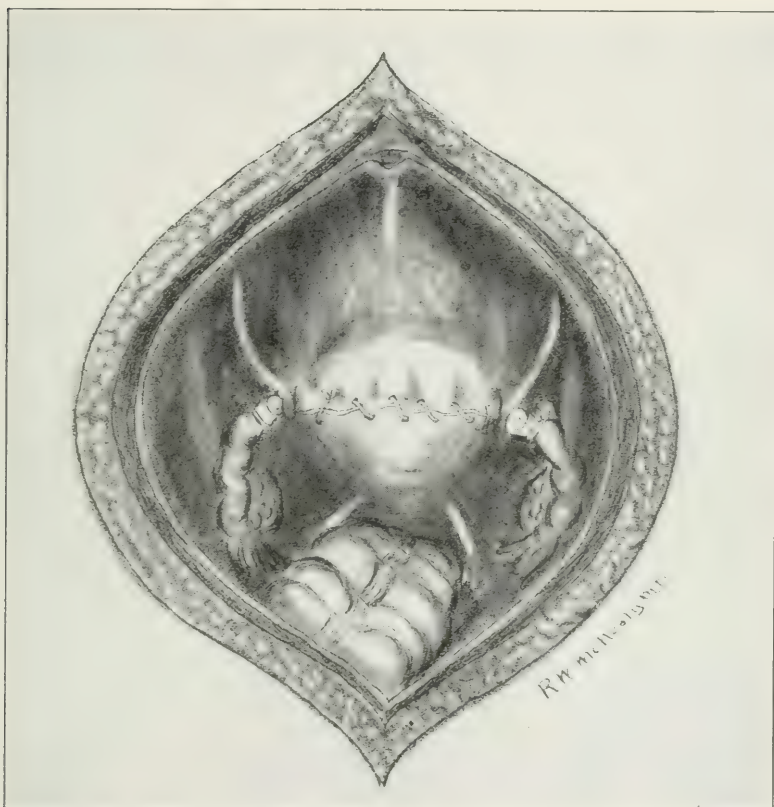


FIG. 5.—Shows the peritoneal flap sutured over the fundus of the uterus and the formation of the utero-tubal septum for sterilization.

the condition of the symphysis is noted, whether it is bare or whether the bladder is lying against it. If the symphysis is bare, this gives an indication for a special step of the operation which is performed later.

Now the peritoneum is opened, usually the gall-bladder and appendix are quickly investigated, then the uterus is pulled up. Looking at the vesicouterine pouch we now see a blue spot (Fig. 3) at the

bottom of this pouch which is due to whatever blood has accumulated in the space between bladder and uterus in consequence of the detachment of the bladder from below. The peritoneum of the vesicouterine pouch is now opened transversely up to the attachment of the round ligaments of the uterus. The finger introduced into the cavity below the peritoneum (Fig. 4) feels the

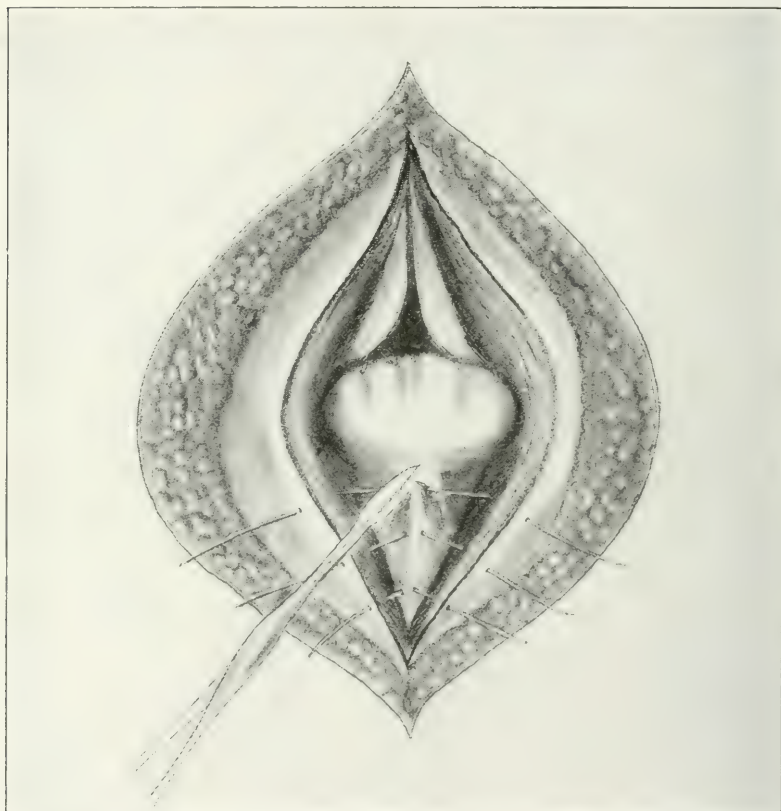


FIG. 6.—Shows the uterus pushed back. The anterior wall of the bladder is held up by a forceps and the sutures which fasten the bladder wall to the abdominal wall are shown.

sutures which hold the vagina to the cervix and reform the anterior fornix. Sometimes veins of the broad ligament which are often varicose in these elderly multiparas, bleed quite profusely, but as the bladder has been detached so extensively, the ureters are quite out of the field and it is perfectly safe to take the necessary sutures in the depth. I have never injured a ureter and have always been

able to stop hemorrhage without any difficulty. The edge of the peritoneum of the bladder is held in a forceps temporarily.

Next comes the sterilization which I accomplish by excising the tube out of the uterine horn in wedge shape (Figs. 3 and 4). The gap in the uterine horn is sutured over by a special suture or this suture is done together with the next step of the operation.

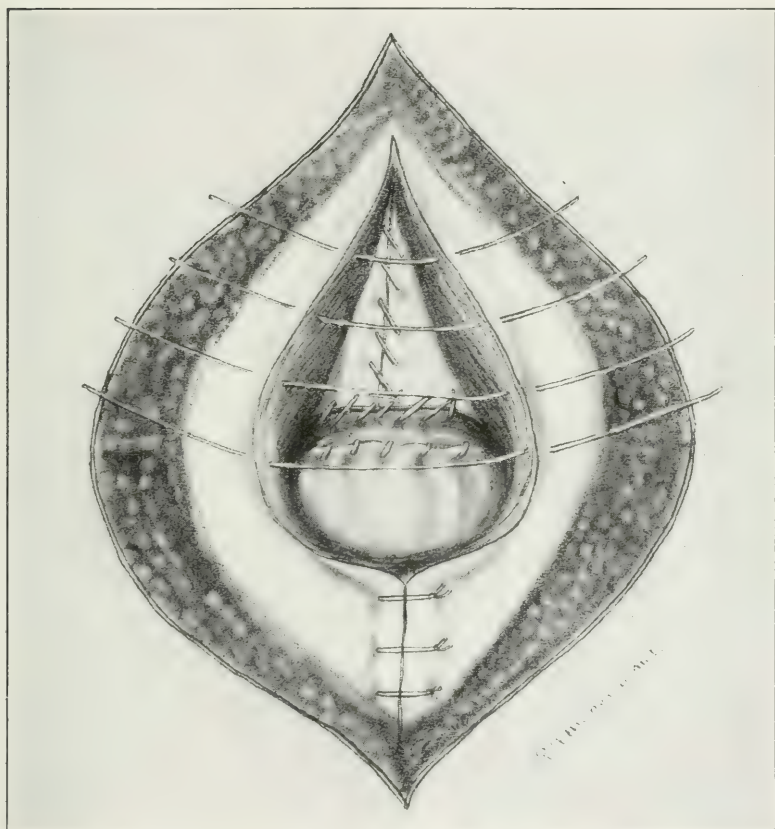


FIG. 7.—Shows the sutures which hold the bladder to the anterior abdominal wall, closed. The parietal peritoneum above the uterus is sutured to the posterior wall of the uterus below the fundus and the peritoneum above closed. The sutures which hold the fundus to the muscles or the fascia are omitted. The sutures shown are those closing the anterior sheath of the recti.

The edge of the peritoneum of the bladder is pulled as high up on the uterus as the tissue will allow, thereby taking the slack out of the posterior vesical wall and fastening the posterior bladder wall high up on the uterus (Fig. 5). This peritoneum and bladder is



sutured to the fundus of the uterus and the stitches which fasten it can be utilized to close the gap in the uterine horn if this has not been done previously. Thereby I interpose a peritoneal flap between uterus and the tube, producing a real tubouterine septum (Fig. 5). The holes of the volsella which have held the uterus are taken care of by the same act. The tube is shortened a little where it is without attachment, the resulting stub is ligated (Fig. 5) to prevent bleeding and is tucked in between the folds of the broad ligament.

Now if the symphysis has been found bare the anterior wall of the bladder is pulled up and stitched to the posterior aspect of the recti muscles as high as the slack permits (Fig. 6).

Next the parietal peritoneum is sutured to the posterior surface of the uterus below the fundus (Fig. 7) so that the fundus is extruded from the peritoneal cavity, and the suture of the parietal peritoneum is completed. The fundus is now seen sticking out of the peritoneal cavity. The recti muscles or sometimes the fascia are sutured to the extruded fundus. The muscles and fascia are then united in the ordinary way and the skin sutured. Celluloid linen is used in the skin, plain catgut for everything else. Dry sterile dressing is applied.

The after-treatment is extremely simple. The patient is placed in bed in the horizontal position. She is reminded to empty her bladder at least every twelve hours. If she cannot urinate while lying down she is held up or helped out of bed, and usually succeeds. Some patients have had to be catheterized. The bowels are moved on the third day by castor oil, if they do not move of their own accord. Liberal diet is permitted after the first bowel movement. There is hardly ever much complaint about pain. The perineal stitches are removed on the fifth, the abdominal stitches on the seventh day. On the twelfth day the patient is allowed out of bed. The majority have left the hospital on the fourteenth day.

30 NORTH MICHIGAN AVENUE.

## THE DEVELOPMENT AND THE PERFECTION OF THE "INTERPOSITION OPERATION" FOR PROLAPSE OF UTERUS AND BLADDER.\*

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(With six illustrations.)

PROLAPSE of the uterus was not treated with much success by the earlier gynecologists. It would be illuminating but useless to recall many of the methods used with the hope of curing these very unfortunate cases, such as by astringents, all sorts of pessaries, and, later, paraffin injections and various electrical currents. The earlier operative expedients were doomed to failure because the pathology was not understood. For instance, a surgeon once ligated the protruding mass and cut away large portions of the bladder, vagina and rectum with the procident uterus. With the development of plastic surgery in America by Sims, Emmet and their successors, a great deal was soon learned, not only of the etiology and pathology of prolapse, but also of surgical efficiency in working a cure.

The results of plastic surgery in the hands of the older gynecologists were hailed with acclamations of almost universal approval, and it was considered quite possible that all of the varieties of prolapse, and of whatever degree, could be relieved by appropriate denudations and the correct approximation of the fascia underlying it. In time, it was realized that such measures were mainly restorations of the mucosa and but partial restorations of over-stretched fascia, while the muscles of the pelvic floor were not seen, not understood, and consequently, were imperfectly approximated.

Plastic surgery had not been appreciated in other countries as in America and while a large percentage of cures were made, a possible 50 per cent. attained, this result was not satisfactory, and we are not surprised that other measures were announced from abroad. The incentive came, therefore, from countries where the results of plastic surgery were not equal to those attained in America, notably from Germany, and now the time seemed appropriate for an advance. Abdominal surgery was still followed by a high mortality, although Listerism had been known for some years, and moreover, abdominal surgery proper was not, at that time, considered justifiable for conditions which rarely endangered life.

\* Read before the Southern Surgical Association, December 18, 1917.

It is always difficult, indeed almost impossible, to settle matters pertaining to priority. Hence, in the recognition of the merits of this or that procedure, or surgeon, we almost despair of accuracy in naming the author of a real step in advance, a real milestone of progress, as definitely and entirely the work of any one individual.

We are indebted to Sanger(1) and to Arx(2) for very early descriptions of methods of operating for cystocele, in which the bladder was separated from the anterior vaginal wall, elevated and sutured to the uterus at a higher level. The long vaginal flaps were then cut away, the new vaginal wall sutured to the anterior

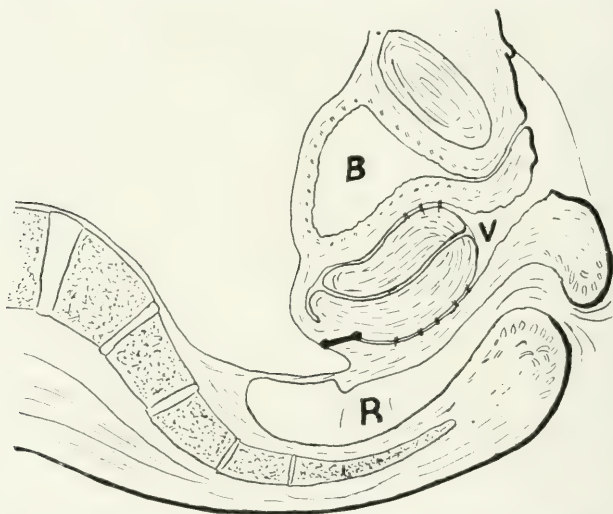


FIG. 1.—Sagittal section through the pelvis with schematic representation of Freund's operation. The uterus is pulled out through an incision in the recto-uterine fold. Then the uterus is sewed, its anterior wall to the posterior vaginal wall, and the posterior wall of the uterus to the anterior vaginal wall. In the fundus, which then points toward the vulva, a new cervical canal is built.

wall of the uterus and the cystocele disposed of in this way. This method was soon adopted by nearly every one, and the former method by denudation rapidly disappeared.

The interposition operation was developed as a result of the experience of Sanger, Arx, and many others who, at about the same time in Europe and America, sought to elevate and secure the bladder in a higher position in the pelvis by suspending it, or securing it by suture to the uterus at or near the fundus. This necessarily brought the anterior vaginal wall immediately in contact with the anterior surface of the uterus. Mackenrodt's(3) operation of "vagino-fixation" for retroversion proved a successful

procedure which was a step still nearer the goal. Freund sought to use the uterus itself to prevent a prolapse, by turning the organ backward through a posterior colpotomy into the vagina and holding it there by fixation sutures.

Wertheim also designed a vaginal fixation method, in which he drew the uterus forward through an incision over the cervix and yet under the bladder, leaving it within the vagina. Both of these procedures were successful in preventing a procidentia, but very soon came measures which overcame this abhorrent use of an intrapelvic organ, and we find that the procedure of Mackenrodt(3) was applied or added to that of Freund and Wertheim by

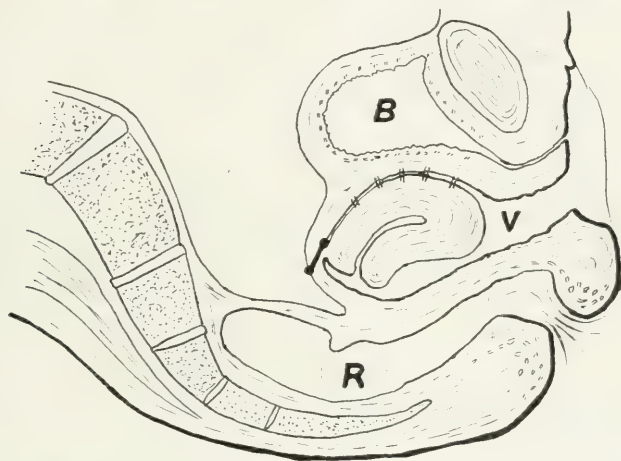


FIG. 2.—Wertheim's modification of Freund's operation. The uterus is pulled out through the incision in the uterovesical fold and then the posterior wall of the uterus sewed to the anterior vaginal wall.

Dührssen of Berlin, Schauta of Vienna, and Watkins of Chicago, who introduced methods of fixation of the uterus between the bladder and anterior vaginal wall, leaving the organ entirely covered by the bladder, and elevated and permanently secured in a new and higher position.

The interposition operation has rather a limited field, for its use should be restricted to those patients who are not liable to bear children. This means that women past the menopause, or those sterilized by operation may be subjected to this operation. If labor occurs, dystocia is unavoidable, if the operation is properly done, and Cesarean section has occasionally been performed upon women who were under forty-five when operated, but who were sure they would not marry.



To summarize the indications for this method, we want (1) to overcome the prolapse of the bladder (which generally precedes that of the uterus), and also to relieve any urinary incontinence, which is often present; (2) to restore and maintain the uterus within the pelvis; (3) to narrow and maintain the vaginal walls in nearly their former normal position; (4) to readjust the pelvic floor and possibly overcorrect its muscular and fascial relaxation, and bring the perineum forward nearer the pubic arch.



FIG. 3.—Suture of the levator ani after cutting the deep transverse perineal muscle at its insertion.

It is of prime importance that the bladder should be in good condition in so far as its mucosa is concerned. This is given especial comment because there is much manipulation of the organ, and, further, because there is interference with vascular and nerve supply, although not much more than in a vaginal hysterectomy.

The condition and size of the uterus should always have our careful attention. Small fibroids should be removed, and, indeed, the size of the uterus may be reduced if thought necessary. This may require a division of the uterine body, with excision of the mucosa. The uterine appendages are easily drawn into view, and

should receive the usual careful inspection and treatment if required. With the fundus in plain view, it is quite a simple operation to sterilize the patient if necessary. This should never be less than a subperitoneal treatment of the end of the divided tube or a resection of the uterine cornua.\*

The uterus is always to be scarified on its anterior and fundal surfaces, for only in this way can one be sure of fixation in the new

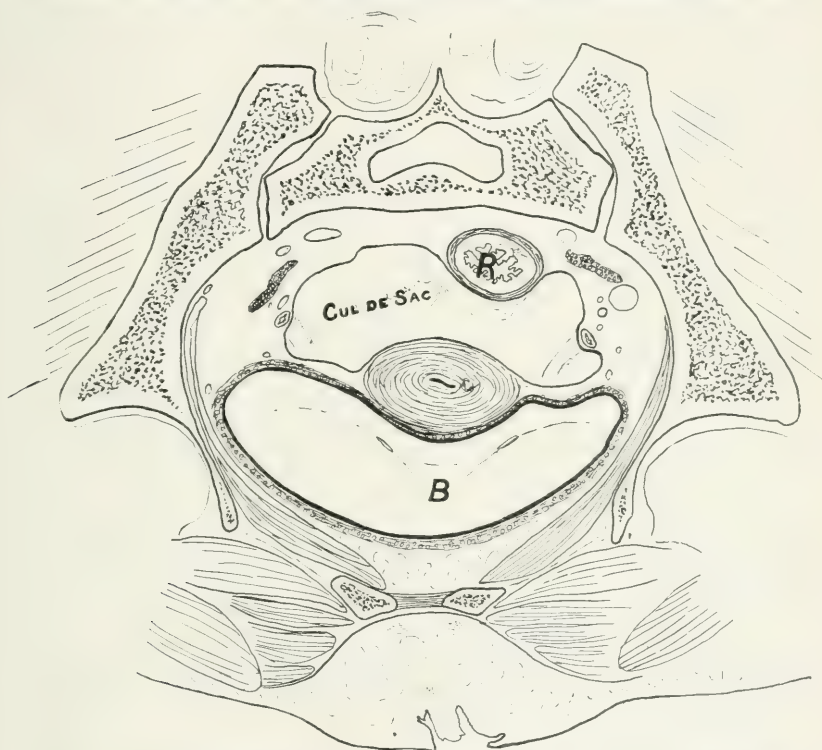


FIG. 4.—Section through a forty-one-year old nullipara; in front through the arcuate ligament, laterally through the center of the acetabulum and behind through the lowest part of the second sacral vertebra. Note the extent to which the bladder fills the pelvis, extending laterally to the points opposite the center of the acetabuli.

position. Both the uterosacral and cardinal ligaments (*i.e.*, the lower part of the broad ligaments) can be utilized in retracting the cervix and, while these supports are not the most reliable elements of repair and permanent security against recurrence, yet they are

\* In those cases requiring shortening of the uterosacral ligaments, it is quite an easy matter to reach them and bring them into view for folding and additional attachment to the uterus.

of undoubted help in retracting the cervix uteri, especially during the first weeks after operation.

It is now generally taught that the office of the uterosacral and round ligaments is mainly to influence the direction of the fundus, or rather the direction of the uterus as it turns upon its axial supports, the broad ligaments. Once these supports have relaxed, and the uterus has become procident, we will find that an extensive change in the connective tissue throughout the pelvis has taken place. Thus, if we make traction upon a prolapsed uterus while we inspect the

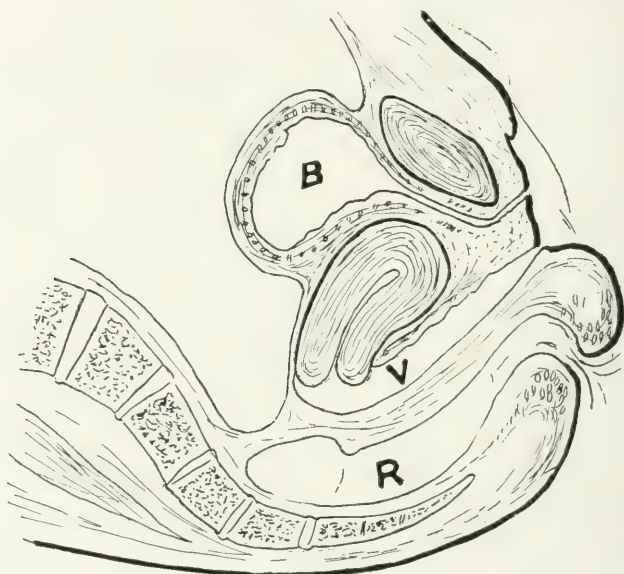


FIG. 5.—Sagittal section after healing of the Schauta-Wertheim operation for prolapse. Attention is called to the manner in which the uterus is placed between the vagina and the bladder and serves as a support for the bladder wall. (From Döderlein and Krönig.)

pelvis through an abdominal incision, by drawing the uterus out of the pelvis, we can accurately estimate the degree of relaxation present. It is important to do this if we would fully realize how very great and extensive are the changes. In most instances, there is marked associated enteroptosis, and, with this, an evidently relaxed connective tissue, with freely movable peritoneum throughout the pelvis.

This operation is the acme of effort to cure extensive prolapse by vaginal methods. It is to be supposed that in every instance, the patient has suffered from the condition which caused her to seek medical advice. The symptoms are not always as definite

as one would expect. The usual complaint is similar to that made by the patient with a hernia, which a prolapse should be called. There is also some residual urine, and a large proportion of cases have incontinence.

The result of the operation as curative of symptoms is in close relation to the careful technic required. However, there is a class of patients who are especially benefited by this technic who

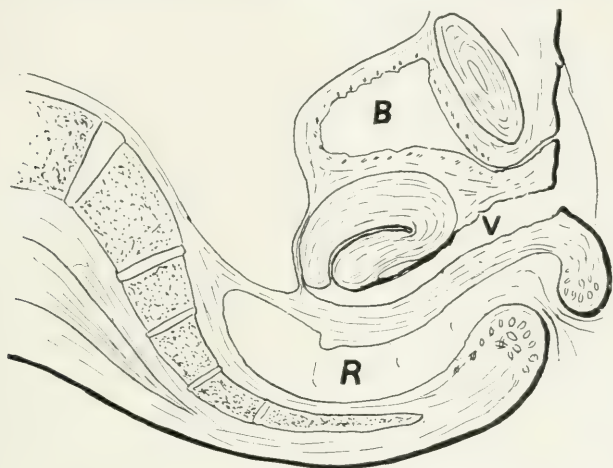


FIG. 6.—The position of the fundus uteri is here shown in outline as relatively higher than in Fig. 5, which is similar to that of Döderlein and Krönig. In Fig. 6 the fundus is sutured to the pubic fascia and is nearly on a line from the lower margin of the pubic arch to the third sacral vertebra. It is the position preferred by Watkins, Crossen and the author.

are not readily treated by any other, namely, the fat woman with prolapse. The lean patients are always easier to treat by any method.

#### RESULTS.

One case of partial recurrence has been observed which had not been submitted to operation in which the cervix uteri came entirely out over the perineum. The fundus had remained securely attached and the bladder was also held well up in the pelvis. Two other cases presented decided foreshortening of the anterior vaginal wall, causing the cervix to appear at the vulva. These patients had this peculiar contraction of the anterior wall of the vagina, which has caused an acute antelexion of the uterus, although only a small cervix protruded ( $\frac{1}{2}$  to 1 inch). There is no tendency to further descent because the fundus uteri is secure in the new position.

The number of patients subjected to this operation comprises



nearly all prolapse cases occurring in my practice during the past fifteen years, in which the operation was as above.

One patient died as a result of infection from an attempt by a nurse to catheterize the bladder through the incision in the anterior vaginal wall. The catheter is generally required for some days subsequent to operation. The bladder should not become greatly distended and hence it is often necessary to use irrigants to prevent catheter cystitis. The writer uses a 2 per cent. protargol solution for this purpose. Neglect of this matter may cause considerable discomfort and even fear, on the part of the patient, that the result of the operation is a failure. The perineorrhaphy is scarcely less important than the fixation of the uterus. The object of the operation is to bring the muscles and associated fascia together. This will result in a new and better support, and also bring the vulva and introitus vagina forward under the pubic arch.

The perfection of the interposition operation necessitates an appreciation of its merits which must come from actual experience, and even an extended experience. Many of the critical objectors are conscientious in their criticisms, but some of them fail to learn that errors of technic may account for apparent failure. The vast number of these operations which are successfully performed show conclusively that it is one of the most useful and satisfactory of gynecological procedures. The accompanying illustration will serve to show the actual shape and lateral extent of the base of the normal female bladder. It is inserted here to show that greater freedom may be given the bladder by a much wider separation of its base than is usually practised. If the uterus is brought through the smallest possible space under the bladder, there is much greater possibility that certain folds of the mucosa may result, as claimed by some writers.

As a matter of fact, none of our patients have complained of distress or pain after operation, save those having cystitis from catheterization, and it is possible that a wider separation of the base of the bladder would prevent some of the symptoms described by authors. The second cut admirably shows how the perineum is brought forward toward the symphysis. It is really an overcorrection.

STONELEIGH COURT.

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REPORT OF A CASE ILLUSTRATING THE VALUE OF  
KIDNEY DRAINAGE WITH THE URETERAL  
CATHETER, OF PELVIC LAVAGE AND  
INTRAURETERAL MANIP-  
ULATION.

BY

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(With four illustrations.)

THE patient, a woman, thirty-four years of age, married, was first seen March 10, 1915. There was a history of chronic constipation, which has been pronounced for the past five years. She had three children previous to 1911, when, during pregnancy, she experienced pain in the right side of the abdomen and back. This was intermittent until December, 1914, when an oxalate calculus, 1.5 by 1 cm., was removed from the right ureter, at the level of the pelvic brim. Following this operation an ureteral fistula persisted. At the time of the first observation, three months after the ureterotomy, all the urine from the right kidney was draining through the wound. Cystoscopic examination at this time showed the mucous membrane of the bladder and urethra thickened, dull, hyperemic, the blood-vessels poorly marked, and flakes of pus loosely adherent to the surface. The right ureteral orifice was slightly dilated, and the surrounding area was somewhat edematous. No urine was emitted from the right ureteral orifice, but there was a rapid flow from the left. A slight cystocele was present, due to the lack of proper support resulting from perineal lacerations, and the patient did not completely empty the bladder. A catheter passed to the left kidney without difficulty. There was a rapid flow of hazy urine, which was acid, had specific gravity of 1012, and showed albumin, blood, pus, and colon bacilli. A catheter on the right side encountered an obstruction at 18 cm. After considerable manipulation a No. 5 catheter passed to the kidney. There was a rapid flow of cloudy urine which was alkaline, with specific gravity of 1015, and showed albumin, a sediment of blood and pus, and colon bacilli. The right catheter was left in position for six days, at the end of which time the urine from the right kidney became clearer and drainage from the fistula ceased. Following the removal of the

catheter the patient had a typical attack of renal colic and passed a calculus. During this attack and since then the fistula has not reopened.

When first seen the patient was in a highly nervous state, her appetite was poor her bowels were constipated, and she had an evening temperature; the heart action was rapid and weak; the abdominal wall was flabby; the right kidney was enlarged, tender, easily palpable, and freely movable; the left kidney was palpable and slightly tender.



FIG. 1.—Soft ureteral catheter making complete loop in diverticulum of ureter.

After kidney drainage by ureteral catheter had been maintained for three days, with daily lavage of the renal pelvis, the picture changed. The temperature became normal, heart action improved, tenderness in both kidneys decreased, appetite returned and the patient, who had been distinctly septic, began to eliminate.

During the passage of the calculus, six days after the removal of the right ureteral catheter, the patient developed anuria. After the passage of the calculus there was a profuse excretion and the patient's condition rapidly improved under colonic irrigations and urinary antiseptics.

One month after the passage of the calculus the patient had another attack of renal colic. An obstruction, encountered by the

ureteral catheter at the same level as before, was passed after manipulation. There was a rapid flow of cloudy urine from the kidney. In twenty-four hours the kidney, which during the colic was large and tender, became reduced in size and the urine cleared. When the catheter was removed after forty-eight hours, a calculus was passed.

At this time a soft ureteral x-ray catheter was passed and a radiograph taken. This picture (Fig. 1) showed a diverticulum of the ureter, the catheter making a complete loop in the dilated por-

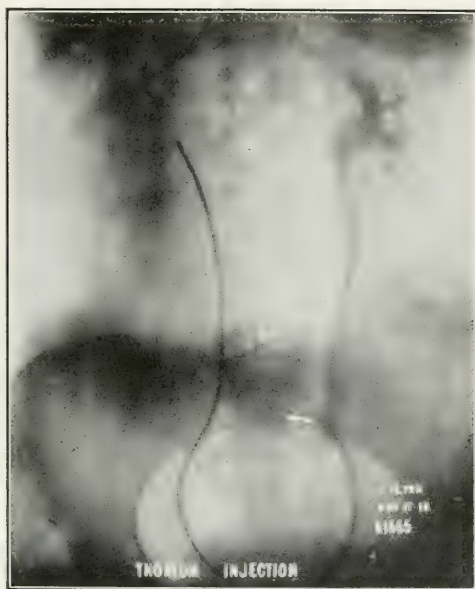


FIG. 2.—Thorium injection of right kidney and ureter. Inflammatory dilatation. Diminution in size of diverticulum.

tion, then passing into the kidney. The diverticulum was at the point from which the first ureteral calculus was removed.

Similar attacks followed at irregular intervals. In each instance the colic was relieved in the same manner and was followed by the passage of a calculus. During 1916 *ten* calculi were passed following intraureteral manipulation. Three were removed from the lower ureter by means of ureteral forceps.

In February, 1917, ureteral catheters were retained for seven days. At the expiration of this time the separate urine showed:



<i>Right kidney</i>	<i>Left kidney</i>
Acid.	Acid.
Trace albumin.	Faint trace albumin.
Urea, 0.4 per cent.	Urea, 1.4 per cent.
Hyalin, granular, blood-studded casts.	No casts.
Occasional red blood cells.	Rarely a red blood cell.
Innumerable pus cells.	Occasional pus cells.
Numerous ureteral epithelia.	Numerous ureteral epithelia.
No crystals.	No crystals.
Colon bacilli.	Colon bacilli.

At this time, as well as at each previous attack, the advisability of nephrectomy was considered, but the presence of infection in the left kidney, with poor urinary output, contraindicated this procedure.

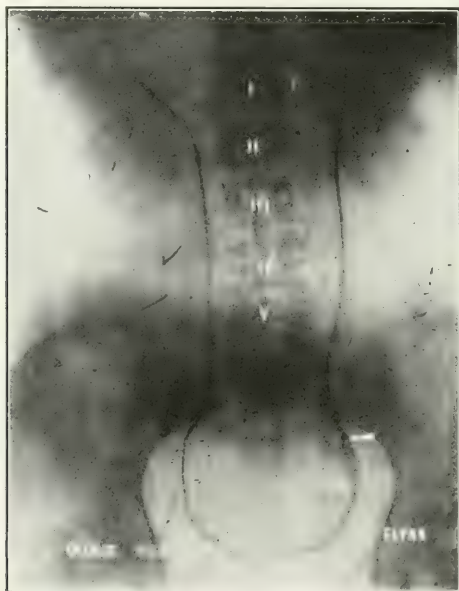


FIG. 3.—Large calculus in right ureter.

A pyelogram at this time (Fig. 2) showed a clubbing of the minor calyces, dilatation of calyces and pelvis of the right kidney, and diminution in the size of the ureteral diverticulum. A plain radiograph with catheter in position showed a large calculus in the right ureter. On withdrawing the catheter it frequently caught, requiring quite a strong pull to free it.

On July 4 and 5, 1917, the patient had severe colic. Cystoscopic examination July 7th (Fig. 3) showed an obstruction 8 cm. from the

bladder in the right ureter. By twisting the catheter in the fingers it coiled about the calculus. Traction, which was then applied, brought on colic. The catheter was loosened by uncoiling. The patient went home and within an hour, during a severe pain, which she likened to a labor pain, passed the calculus, 3.5 by 1.5 cm., shown in the cut (Fig. 4). The passage was followed by a gush of urine (over a quart by her statement). This was followed by complete relief of pain and discomfort, and the patient has been well to date.



FIG. 4.—Calculus shown in Fig. 3. Removed by coiling catheter about the calculus and applying traction.

Cystoscopic examination November 20, 1917, showed bladder and ureters free of inflammation, no obstruction of either ureter, a normal urinary flow on each side. Catheterized specimens were as follows:

<i>Right kidney</i>	<i>Left kidney</i>
Acid.	Acid.
Trace albumin.	Trace albumin.
Urea, 1.2 per cent.	Urea, 2.2 per cent.
Occasional hyalin and finely granular casts.	Occasional hyalin and finely granular casts.
Rarely a red blood cell.	Rarely a red blood cell.
Rarely a pus cell.	Rarely a pus cell.
No crystals.	No crystals.
Colon bacilli.	Culture negative.

The lower pole of the right kidney was palpable, left kidney not palpable. No tenderness. General condition excellent. Bowels regular with mild medication. No urinary symptoms.

The last examination, February 5, 1918, showed kidney urines free of pus and colon bacilli. Patient has taken no medication other

than hexamethylenamin, urotropin and sodium benzoate  $\bar{a}\bar{a}$  gr. v, twice a day. She has gained 20 pounds, feels very well, bowels are regular, appetite good. She has worn a well-fitted corset for the past year which has given her excellent abdominal support.

The interesting facts in this case are:

1. History of obstinate constipation.
2. Abnormal mobility of right kidney.
3. First calculus found during pregnancy, when constipation was increased, greater amount of toxic material and bacteria were thrown upon the kidney, with poor drainage of the latter.
4. Formation of diverticulum at point where ureter was opened, due to traumatism of ureter and presence of a second calculus below, which was not removed at the operation.
5. Presence of a bilateral kidney infection.
6. Rapid closure of the ureteral fistula and the improvement in the patient's condition under continuous kidney drainage with retained ureteral catheters.
7. Formation of calculi in ureteral diverticulum.
8. The possibility of removal of ureteral calculi by means of intraureteral manipulation, even to the size of the calculus shown in the cut.
9. The complete cure of the infection and with it the cessation of calculus formation, by attention to the general condition of the patient, care of the bowels, abdominal support, and local treatment of the kidneys by lavage.

40 EAST FORTY-FIRST STREET.

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## DELIVERY BY ABDOMINAL SECTION.

BY

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IN the fifty years that have elapsed since the AMERICAN JOURNAL OF OBSTETRICS was established greater changes have occurred in the practice of obstetrics than in any other branch of medicine. A half century ago obstetrics was practised under great difficulty and with such limitation as to make impossible the doing of skilful and accurate work. The obstetrician never thought of immediately closing a laceration of the cervix even though hemorrhage from this source might be profuse; repair of laceration of the pelvic floor and perineum was confined to the closure of the skin. No thorough examination of the genital tract was made after labor to accurately

ascertain the nature and extent of injuries. As antisepsis was unknown, the invasion of the uterine cavity was often followed by septic infection. The placenta was frequently delivered by traction upon the cord with resulting relaxation of the uterus, and hemorrhage and sometimes inversion of the womb. Substances introduced into the uterus to check postpartum hemorrhage were not sterile and septic infection frequently followed their employment. But little attention was paid to securing good involution and the patient frequently recovered from labor with the genital tract in a badly damaged condition.

While this condition was bad enough, there were other circumstances much worse. Pelvimetry was rarely practised in America; delay in labor with head presentation was almost invariably treated by the application of forceps, with the frequent result of the death of the child. The application of forceps at, and above the pelvic brim produced severe lacerations, while long delay in labor was followed by sloughing and the formation of a vesico- or rectovaginal fistula. The woman having a contracted pelvis had before her the prospects of a tedious labor ending with the extraction of a dead child by forceps or craniotomy; the risk to her own life was appalling. Delivery by abdominal section was rarely performed, usually as a last resort and followed by very high mortality.

To-day, delivery through the vagina is limited to those cases in which a living child can thus safely be born with minimum injury to the mother. In protracted pregnancy the induction of labor under aseptic precautions has a low maternal mortality and gives a reasonable chance for the child. Contracted pelvis has become one of the least dreaded complications in obstetrics and even cases of contracted pelvis complicated by septic infection, have a remarkably reduced mortality.

Foreign growths obstructing the pelvis have ceased to be a serious complication and even rupture of the uterus has a greatly reduced mortality. These gains must be ascribed, in great part, to delivery by abdominal section. It may be of interest to briefly review the present status of this procedure.

There are certain indications for delivery by abdominal section which are accepted by obstetricians; great disproportion between mother and child with a healthy living child, the mother in labor or very near labor, calls for delivery by abdominal section. Accidental separation of a normally implanted placenta is accepted by the majority of obstetricians as a fair indication for abdominal section. Rupture of the uterus, like ectopic gestation, also calls for section.



In cases where the history of previous labors shows unusual difficulty, with fetal mortality and maternal morbidity, delivery by abdominal section is accepted and with the consent of husband and wife, may be terminated by sterilization. Cases in which foreign growths render vaginal delivery impossible afford a clear indication for delivery by abdominal section.

There are other cases in which a difference of opinion exists among obstetricians but in which the claim for abdominal section cannot be denied without due consideration; such for example is placenta previa in which many obstetricians deliver by abdominal section. Prolapse of the cord in a primiparous patient with partly dilated cervix is another such condition. Cases of eclampsia where the birth canal is undilated and unyielding furnish an indication considered valid by many.

Cases of abdominal section may be divided into elective, and those operations performed during labor; when the operator is sure that no reasonable chance exists for successful vaginal delivery, he may elect to spare his patient the suffering and uncertainty of fruitless labor and choosing a favorable time at full term, perform an elective operation. This has much to commend it and is frequently adopted.

Methods of performing delivery by abdominal section are those in which sterilization is not performed, and those in which the power of reproduction is ended. In the first, the so-called classic or Sanger operation is most frequently done, in this the essential element is an accurate and separate closure of the muscular walls of the uterus preferably by the buried silk suture; the site of uterine incision in these cases is always through the upper contractile uterine segment and may be carried up to the fundus at the pleasure of the operator. The separate closure of the peritoneal covering of the uterus is an essential part of this operation. In this country the transverse fundal incision of Fritsch, is rarely practised. Operators differ with regard to the advisability of leaving the uterus within the abdominal cavity while it is emptied, or removing the uterus from the abdominal cavity before it is opened and while sutures are inserted. There is reason to believe that the uterus can be more thoroughly sutured when it has been removed from the abdominal cavity, and there are cases of rupture of the scar in the uterus after Cesarean section where the uterus was opened in the abdominal cavity, which strengthen this belief. In cases where postpartum relaxation and hemorrhage are feared after section, at the time of operation the uterus may be packed with 10 per cent. iodoform gauze which can readily be removed through the vagina. In suspicious cases this

procedure is not only a safe-guard against bleeding, but is a very effective method of preventing the development of septic infection.

The so-called extraperitoneal Cesarean section is practised to some extent in this country. Those who do it must operate practically through a peritoneal fistula, as the peritoneum is united to the uterus before the latter is opened. The majority of American obstetricians have not accepted this operation. In the hands of those skilled in its use the results in the majority of cases are good.

When sterilization is indicated elective operation followed by supravaginal amputation with removal of the Fallopian tubes is a very satisfactory procedure.

Recent studies upon the result obtained by leaving the ovaries after hysterectomy are not favorable and certainly in women forty or over, hysterectomy may well be followed by the removal of the ovaries; appendectomy is often added to this operation.

When indications point to delivery by abdominal section and septic infection is present, the operator has his choice of hysterectomy, leaving the stump outside the peritoneal cavity or the total extirpation of the infected womb. Of these the majority of opinion is for the former; by this proceeding the patient is finally left in excellent physical condition; the stump is retained as a firm scar which makes prolapse of the pelvic tissues impossible, while after total extirpation of the womb, there is a danger, even though remote, that prolapse of the vagina may develop or that the vaginal scar may separate or rupture.

Two subjects connected with delivery by abdominal section are to-day under frequent discussion. In complete placenta previa with undilated cervix, delivery by abdominal section has excellent grounds for adoption, in other forms of placenta previa it may rarely be necessary. In eclampsia there are those who believe that with the patient in fairly good condition, prompt delivery by abdominal section affords the best chance for recovery. There is good ground for believing that abdominal section is an aid materially in the treatment of severe toxemia in the latter months of pregnancy, and that delivery by abdominal section should be elective before the occurrence of severe convulsions.

As in other surgical procedures, operators differ in their methods of performing delivery by abdominal section, many suture the uterine muscle with silk while others prefer catgut. There is some difference as regards the extent which the uterine wall shall be subjected to suturing in this operation.

The interests of the child are conserved in the highest possible

degree in delivery by abdominal section; not excepting spontaneous birth, there is no method of delivery so safe for the infant. In cases where the mother is highly toxemic it must be remembered that the fetus shares her condition and hence that no undue risk be brought upon her in the hope of saving a diseased child.

Operators differ in their methods of anesthesia for delivery by abdominal section and in the after-treatment of their cases, but the general procedures which pertain in abdominal surgery are generally followed: some urge the patient to get up early in her convalescence, others delay for two or three weeks. It is universally recognized that after such delivery the woman who could nurse a child under different circumstances will be usually successful after the operation. Lactation is usually quite as successful as after delivery by other methods.

Delivery by abdominal section has practically eliminated the so-called high forceps operation, reduced craniotomy to its proper but narrow sphere; in its elective form it has rendered unnecessary, efforts at spontaneous parturition.

Criticism has been directed against the so-called unnecessary performance of this operation. Much of this criticism is valueless because based upon insufficient observation. In examining hospital records of a large State where hospitals are comparatively abundant, the total number of surgical operations performed was ascertained, and also the number of deliveries by abdominal section. In fifty-one hospitals there were in one year, 78,905 operations designated as surgical in these hospitals. There were performed 6498 operations called gynecological and 862 under miscellaneous headings, as operations upon nose, throat, eyes or ears, making a total of 86,265 operations. During this same year there were performed but 114 deliveries by abdominal section. The staffs of these hospitals varied from those of teaching hospitals in large cities, where obstetric specialists held their clinics, to the hospital of the small town whose staff was composed of men not obstetric specialists. Many of these hospitals are among a population largely of foreign birth in whom are many deformed pelves. In view of all these circumstances the claim that delivery by abdominal section is performed too frequently, seems hardly well founded. That in some quarters unnecessary operations are done, there can be no doubt, but the probability is that the operation is not performed often enough and that skilled obstetricians, if they could review all complicated cases of labor, would declare the operation indicated much more frequently than it is at present performed.

In judging of the mortality and morbidity accompanying an operation there is room for considerable fallacy. If an operation is of such a nature that it is inevitably accompanied or followed by dangerous hemorrhage, death from such hemorrhage may be fairly ascribed to the operation; so also with septic infection, but if the operation in considerable numbers shows only a mortality incident to all surgical procedures, then the mortality of this particular operation cannot be considered high. In examining the writer's record of delivery by abdominal incision, he finds no deaths from hemorrhage nor from septic infection originating at the time of operation. Death followed operation from preëxisting nephritis, dilatation of fatty heart, pulmonary embolism, pneumonia, causes which are common to all surgical procedures.

In estimating the mortality of the operation it seems fair to divide cases into those uninfected and in fairly good condition at the time of operation and those which were infected and in bad condition when operation was done. The former number 194 cases with a maternal mortality rate of 1 per cent., the latter number 66 cases with a maternal mortality rate of 30 per cent. The general mortality rate is approximately 8 per cent., which compares favorably with the mortality rate of other major surgical operations performed upon a similar number of patients varying in all degrees of preparation, absence of preparation and complicated and uncomplicated conditions.

We do not wish to urge the indiscriminate performance of delivery by abdominal section. Obstetrics is as much a specialty as surgery and in the hands of a trained obstetrician the method of delivery in a given case may safely include abdominal section under a considerable number of circumstances. That parturition is robbed of some of its greatest dangers by this operation, cannot be denied. That not only the life but the health of the mother and child have been saved in this way must be admitted. Those who have studied the literature of obstetrics and who have personally witnessed the development of the operation in this country during even the last twenty years, appreciate the numerous benefits that have come to mother and child through this method of delivery. Further improvements in the result of obstetric practice will be obtained by procuring for the parturient woman in complicated cases, the services of a skilled obstetrician; by multiplying hospital facilities for the delivery of difficult cases and by educating the public to realize that as general surgery has brought great blessings to humanity in saving life and lessening suffering, so obstetric surgery stands ready to perform an equal service if it be given a fair opportunity.



## PAINLESS CHILDBIRTH.

BY

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THE greatest outrage of our modern civilization is the agony that women, in most instances, are forced to endure in bearing children. Yet any effort to ameliorate that great injustice is met with doubt, scorn and criticism on the part of both medical profession and laity.

Our modern civilization, with its higher educational standard and its more protective environment, has developed a type of nervous system that is very susceptible to painful impressions. Not only do we feel pain more acutely, but our physical and nervous forces are much more depleted thereby, with consequent material reduction of vital energy. Hence, we find, as a result of this impairment of our motive force, a general lack of that feeling of "well being" that constitutes good health and a corresponding inability to produce effectual effort, either mental or physical.

In spite of these well-known facts, which are constantly being recorded in medical literature, the profession and public live in silent acquiescence and have no regard whatever for the knowledge which will alleviate the suffering endured by women during childbirth. They even look askance at all effort that is made to do away with pain and make woman's lot, at this time, and subsequently, more endurable.

Our most recent obstetrical literature informs us, after a careful study of recorded vital statistics, that over 20,000 women are dying in the United States every year from childbirth, and that hundreds of thousands are rendered more or less permanent invalids from the same cause. All honest writers on the subject agree in the opinion that the effect on our modern woman of the suffering endured by her during childbirth impairs the nervous organization and the general vital forces to a degree which is assuming an importance that should make intellectual people take serious cognizance of the matter. Yet, our thinking people, without giving the matter either due thought or intelligent investigation, deride the efforts of the few who have truly thought, who have patiently investigated and, as a result, offer a perfectly sound and safe remedy.

It is nothing short of a crime for women to be permitted to suffer

their way into motherhood. It is an outrage that the most perfect and ideal relationship in the world should be accompanied by so much physical distress and so much mental chaos that weeks or months are required, in most instances, to overcome the shock induced by these unnecessary and pernicious conditions.

Childbirth should be looked forward to with pleasure. It should be relieved of everything that interjects a single element of fear or dread. The maternal mind, if we wish to have the highest type of children, should be freed from the contemplation of anything undesirable associated with the coming event.

We have at our disposal now an ideal anesthetic that carries the woman through her entire labor, not only without pain, but, in most instances, without any consciousness of the event whatsoever, so that sensitive women are spared all knowledge of obnoxious detail connected with her delivery as well as being spared all feeling of suffering. Therefore, they emerge from their labor with all their vital energy intact; with no remembrance of suffering; with a smiling, joyous sense of motherhood; with a physical fitness which makes them conscious of their ability to take up the tasks which motherhood imposes.

The nervous and physical exhaustion, which has been a necessary accompaniment of motherhood in the past, is no longer present, but is replaced by a sense of physical fitness which fills the new mother's heart with joy and courage. The difference between the old régime and the new is so great as to seem almost miraculous to those who have experienced both methods. During all the past years women have been in bondage from which they are now being freed. To us, in the profession, who are practising the new régime, it is a constant source of joy to see motherhood robbed of its terrors, freed from its shackles of physical incompetency, and made a thing a joy and gladness associated with wonderful physical and mental poise.

Fortunately, too, the mother is not the sole beneficiary from this humane and health-saving treatment. The benefits accruing to the child are just as remarkable.

In the first place, many more children are born alive under the new régime. Statistics show that the number of stillborn infants has been greatly reduced by the administration of continuous anesthetics to the mother. In Freiburg, where this treatment originated, the number of stillbirths was reduced from  $4\frac{1}{2}$  per cent. to less than 2 per cent. In this country, the number of stillbirths, in the hands of men who are using painless labor methods, averages

about  $1\frac{1}{2}$  per cent., while, under the old régime, the average number of stillbirths seems to be about 5 per cent. Recent reports from the city of New York on maternity statistics show that the average number of stillbirths was over  $5\frac{1}{2}$  per cent. Williams, of Johns Hopkins, reports the stillbirths at that institution as being 7 per cent. Slemmons, who is now at Yale, but previously had charge of the obstetrical work at the University of California, reported an infantile mortality of over 5 per cent. in 500 consecutive cases. These figures represent a fair general average. In contradistinction to these figures, Krönig, of Freiburg, reported 5000 cases of scopolamin-anesthesia (the so-called "twilight sleep") with only 1.7 per cent. of stillbirths. Polak, of Brooklyn, reported 550 cases with only four stillbirths, less than 1 per cent. I have had 400 cases in my own personal work and my percentage of stillbirths corresponds very closely with the Freiburg statistics. It is very evident from these figures that the treatment, far from being injurious to the infants, as is stated by our critics, adds materially to their chances of being born alive.

In the second place, let us consider what happens to these children after birth. Several papers written by prominent men during the last year state that, in round numbers, 10 per cent. of the children born alive do not survive the first year of their lives. The recent report of the New York statistics verifies this opinion. The cause of these infantile deaths are many, but the chief one is inanition, that is, a general lack of vitality in the child. In 400 cases delivered by scopolamin anesthesia by myself, the infants have been followed for periods ranging from one month to four years, and only four deaths have occurred in that length of time, and two of them were the result of accidents, one child falling from a second story window to the pavement below, and the other having eaten ant poison. We see, therefore, that if vital statistics mean anything, the infants delivered by painless labor methods show a most remarkable degree of vitality. This is due, of course, to the fact that our method produces healthy, vigorous, competent mothers, instead of nervous, debilitated ones, and the physical and nervous condition of the child bears a direct ratio to that of the mother. Every single vital statistic that has been recorded shows the superiority of a painless labor method, over the old régime, wherever that method has been properly used. 13

Much of the professional criticism has been due to the fact that inferior preparations of scopolamin have been used. Experience has shown, and many observers have recorded the fact, that this

drug is practically valueless in tablet form—the form in which it is most commonly used, because most convenient—and that good results can only be obtained by using either freshly prepared solutions from the original crystals, or by the use of ampules prepared by special methods. Even the crystals have to be carefully guarded from exposure to air to prevent deleterious degeneration of the drug from taking place, which entirely alters its therapeutic action.

The application of a continuous anesthetic in labor adds very materially to the expense of obstetrics. For that reason, most of the larger hospitals find its use impracticable until such time as general public opinion becomes aroused to the point of providing sufficient funds for the obstetrical department to offset the necessary increase in expense.

In private practice, many physicians are unwilling to meet the demands on their personal time that a continuous anesthetic entails. It means constant attendance on the patient during her entire labor instead of during the last hour or two of labor. Think of what this would mean to a busy general practitioner and then you have answered the question that is so often asked, why do not physicians in general take up this treatment?

In some instances, doubtless, professional criticism comes as a result of lack of knowledge of the fact that the perfected system of using scopolamin anesthesia has removed all objectionable features that characterized the use of a certain pernicious tablet containing scopolamin and morphine that was in vogue about sixteen years ago, and still is used by some, and called "Twilight Sleep" treatment, because it contains scopolamin. In using this tablet combination we were, without knowing it, using an imperfect preparation of scopolamin, in the first place, and using dangerous quantities of morphine in conjunction with it, in the second. The large, repeated doses of morphine, which have been entirely eliminated from the present system of scopolamin anesthesia, resulted in asphyxiation of the infants, in many instances, and it is this recollection which undoubtedly makes many physicians speak adversely of the present treatment, and advise against its use on the ground of its effect on the infant.

They will tell you that the babies are born asphyxiated (the so-called "blue babies"). This criticism is absolutely untrue of the present system, if it is properly used. In a personal observation of several hundred cases I have failed in a single instance to note any asphyxiated infant except where there was some mechanical reason for the same, in which case it would have occurred whether an anesthetic



was used or not. In fact, we do not have nearly as many asphyxiated infants as we had before we used such a treatment.

In one of the large lying-in hospitals in New York, two very competent observers, in order to prove this, and one or two other moot points, confined 200 women under the same general conditions. One hundred were given scopolamin anesthesia; 100 were confined without it. In their report they said that nearly all the scopolamin babies cried lustily at birth and showed no evidence of drug influence, while seven of the babies born in the usual way were asphyxiated and required the application of methods of resuscitation.

I have yet to find any condition that, in practical work, offers a contraindication to the use of scopolamin, properly administered. I have never seen a single objectionable symptom from its use, as I use it. All the vital functions are rested instead of being overworked. In patients with broken heart compensation a painless labor is, indeed, a vital necessity.

Scopolamin is a perfect first stage anesthetic, relieving the patient of all the wear and tear of the long tedious hours of uterine dilatation. It carries the patient well into and mostly through the second stage of labor. During the stage of actual delivery, it should be augmented by some efficient, and equally harmless, inhalation anesthetic, and here we find the use of gas and oxygen a perfect supplemental aid.

Humanity cries out for the relief of the torture which characterizes old time methods of childbirth. The time is rapidly passing when women will patiently endure needless suffering or when the intelligent men of our communities will permit such suffering.

My own personal experience makes it possible for me to say that nothing but blind prejudice or willful selfishness on the part of the medical profession makes necessary any material amount of suffering in connection with childbirth, and I surely hope that the time of woman's emancipation is not far distant.

During the last decade or so, women have demanded their rights in other respects, and it is devoutly to be hoped that they will demand the right to bear children without suffering untold anguish of both mind and body, and, at the same time, free themselves from the all too frequent disastrous after-effects which such suffering entails.

ANALYSIS OF THE BLOOD IN ECLAMPSIA AND  
ALLIED INTOXICATIONS.\*

BY

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THE familiar cases of autointoxication during the latter months of pregnancy which are characterized by headache, edema, arterial hypertension, and albuminuria—cases which frequently culminate in convulsions—are generally ascribed to some derangement of metabolism, especially of nitrogenous metabolism. This view is tenable as a working hypothesis because the nitrogenous waste-products of the urine are usually not only diminished but bear an abnormal quantitative relationship to each other; and the degree of albuminuria fluctuates, often corresponding in its fluctuations with changes in the severity of the autointoxication. Nevertheless, urinalysis fails to supply a great deal of desirable information for the interpretation and the management of preëclamptic toxemia. It does not distinguish the patients who will suffer from convulsions and those who will not; and it gives no clue to the underlying cause for the complicated series of structural and functional abnormalities associated with eclampsia.

For a long time we have cherished the hope that blood-analysis, bringing us a step nearer the seat of the pathological process, if it did not actually disclose the identity of the responsible toxic agent or reveal to what class of chemical compounds it belonged, would at least teach the relation of this substance to nutritional processes during pregnancy. Now, fortunately, there are at hand a number of methods for blood-analysis. The list is not complete and we may not study every constituent nor all the varied properties of the blood, but we may estimate accurately most of its nitrogenous constituents including the nonprotein nitrogen, amino acids, urea, uric acid, creatinine and creatine. There is also an excellent method for the determination of the blood-sugar and other methods, though less exact, yield satisfactory results for the fats and the lipoids. Also, the question of the chemical reaction of the blood may be attacked from new angles by determining the hydrogen-ion concentration and the carbon dioxide combining power of the plasma.

\* From the Department of Obstetrics and Gynecology, Yale Medical School.

It is natural, then, that the procedures devised for accurate analysis of small amounts of blood should be promptly utilized to study the baffling problems of pathological-physiology presented by eclampsia. The results are instructive and serve to correct certain erroneous suggestions regarding the cause for this disease, but they will not alter medical practice. They afford no better clinical tests than already existed to determine the severity of a toxemia, or its probable outcome. As formerly, in cases of preëclamptic, eclamptic, and nephritic toxemia the most reliable clinical guides are the increase of arterial tension, the degree of albuminuria and the extent to which the nitrogen of the urine is diminished.

But, as I have said, the results of blood-analysis during pregnancy are important because they contradict certain popular hypotheses offered to explain eclampsia, namely, one which attributes the disease to an acidosis and another which holds that some derangement of protein metabolism is the ultimate causal factor. The elimination of these hypotheses simplifies the problem of eclampsia and correspondingly increases the likelihood of its solution. The facts at hand, then, though lacking immediate practical application, deserve our interest because they are of a fundamental character.

The data collected from blood-analysis relate in part to the material out of which tissue is constructed and the material which supplies energy for this construction, in part to the waste-products which arise through the utilization of the food-stuffs. For the sake of convenience we shall discuss consecutively the nonprotein nitrogen and its components, the sugar, the fats and lipoids, and finally the alkalinity of the blood as measured by the carbon dioxide combining power of the plasma.

#### NONPROTEIN NITROGEN.

So far as quantity is concerned, of course, the dominant nitrogenous constituents of the blood are proteins; but in every hundred cubic centimeters of blood there are between 20 and 25 milligrams of nonprotein nitrogen. The latter, relatively small fraction of the total nitrogen is the portion immediately concerned in metabolism. Thus, the nonprotein nitrogen consists partly of nutritive material, the amino-acids, and partly of waste-products. In health each of these two groups accounts approximately for half of the nonprotein nitrogen of the blood, though this relationship is not constant, and a tendency toward somewhat lower values for the urea would seem to be characteristic of pregnancy.

TABLE I.—NONPROTEIN NITROGEN AND UREA.\*

No.	Clinical diagnosis	Nonprotein nitrogen	Urea nitrogen	Per cent. urea	Systolic blood pressure	Albuminuria	Delivery
	Normal pregnancy.....	8-13 mg.	8-14 mg.	35-50	Mm. of Hg. 120		
1	Preëclamptic toxemia....	27.5	16.1	59	158	Esbach 0.1%	Spontaneous
2	Preëclamptic toxemia....	21.2	13.1	61	115	0.05	Forceps
3	Preëclamptic toxemia....	21.5	13.2	61	162	1.25	Spontaneous
4	Preëclamptic toxemia....	25.0	9.3	37	145	0.05	Spontaneous
5	Preëclamptic toxemia....	29.0	.....	.....	180	0.025	Forceps
6	Preëclamptic toxemia....	29.7	.....	.....	190	0.5	Spontaneous
7	Preëclamptic toxemia....	28.7	9.3	39	185	3.0	Accouchement forcé
	12 hr. after operation....	30.2	20.5	68			
	2d day postpartum.....	28.7	7.5	26			
8	Antepartum eclampsia....	31.0	12.6	46	200	2.1	Cesarean section
9	Antepartum eclampsia....	47.9	15.9	33	220	2.5	Cesarean section
10	Antepartum eclampsia....	22.0	15.6	71	190	3.75	Vaginal hysterotomy
11	Antepartum eclampsia....	39.2	.....	.....	170	1.5	Accouchement forcé
12	Intrapartum eclampsia (fatal) suppression of urine.	45.7	28.4	62	190	.....	Forceps
13	Intrapartum eclampsia....	22.0	14.5	66	190	2.2	Forceps
	Before and after convulsion.	27.2	18.3	67	230	.....	
14	Postpartum eclampsia....	31.0	.....	.....	155	0.1	Spontaneous
15	Postpartum eclampsia....	36.7	.....	.....	205	0.4	Spontaneous
16	Postpartum eclampsia....	30.0	13.1	43	140	0.3	Spontaneous
17	Postpartum eclampsia....	30.7	14.5	47	185	0.1	Spontaneous
18	Postpartum eclampsia....	27.8	14.0	.....	215	0.1	Spontaneous
19	Nephritic toxemia.....	46.5	27.6	59	180	0.2	Spontaneous
20	Nephritic toxemia.....	33.7	21.0	62	185	Trace	Spontaneous
21	Nephritic toxemia.....	27.5	9.3	34	170	Trace	Spontaneous
22	Nephritic toxemia.....	32.5	19.2	59	150	0.5	Spontaneous
23	Nephritic toxemia.....	70.0	44.8	64	255	0.4	Vaginal hysterotomy

\*The nonprotein nitrogen and the urea are expressed in terms of milligrams of N. per 100 c.c. of blood.



When pregnancy is complicated by preëclamptic toxemia we generally find that the nonprotein nitrogen is normal. On the other hand, frequently, it is increased as soon as the convulsions make their appearance. Patients suffering from nephritis present higher values; indeed, the highest found in any type of toxemia. There are, however, notable exceptions to the rule; and with the "blood-nitrogen" as a criterion it is impossible to determine whether a case in question is one of true eclampsia or of nephritis. And again, in eclampsia the nonprotein nitrogen is untrustworthy as a prognostic sign. We are convinced that it merely affords an index of the incapacity of the kidneys and serves this purpose during pregnancy no better than urinalysis.

Urea, which is increased to a greater or less extent in the blood of eclamptics is chiefly responsible for whatever increase occurs in the nonprotein nitrogen. Typically, the urea represents from 60 to 70 per cent. of the nonprotein nitrogen in cases of eclampsia and allied intoxications, whereas the normal figure for pregnancy lies between 40 and 50 per cent. Changes in this ratio have not been found reliable as a means of predicting the outcome while the toxemia is in an early stage, or later. As a matter of fact, more urea has been found in the blood of patients who recovered from eclampsia than in one who succumbed to the disease. This simply means that urea-retention is but a single factor in this complex disease; it provides merely a measure of renal insufficiency.

TABLE II.—URIC ACID.\*

No	Clinical diagnosis	Mmg. uric acid per 100 c.c. of blood	Systolic blood pressure	Albumin-uria, per cent.	Delivery
			Mm. of hg.		
	End of normal labor . . . .	2-8	120		
1	Preëclamptic toxemia . . . .	8.1	180	1.8	Accouchement forcé
2	Preëclamptic toxemia . . . .	6.0	180	1.5	Spontaneous
3	Preëclamptic toxemia . . . .	8.1	190	0.9	Induction of labor
4	Antepartum eclampsia . . . .	8.3	210	2.0	Accouchement forcé
5	Antepartum eclampsia . . . .	9.1	220	2.5	Cesarean section
6	Nephritis . . . . .	4.9	180	0.8	Induction of labor
7	Nephritis . . . . .	3.4	220	0.6	Forceps
8	Nephritis . . . . .	4.5	190	0.8	Spontaneous

\* The results are expressed in terms of uric acid, one-third of which is nitrogen. The analyses were made by L. J. Bogert.

The blood urea, consequently, fails to differentiate eclampsia from nephritic toxemia, though in the latter usually the urea-retention is much more pronounced.

Uric acid supplies another illustration of the retention of waste-products. During pregnancy the blood contains no more uric acid than at other times (2 to 5 mg. per 100 c.c.) and even at the conclusion of labor normal values obtain in multiparous women. On the other hand, primiparæ present a distinct increase at the conclusion of labor and at this time the retention of uric acid in the blood is often as great as when patients are seriously ill from a toxemia of pregnancy. Curiously, it has been our experience that larger quantities of uric acid occur in eclamptics than in cases of nephritis without convulsions. Should this distinction hold regularly we would be inclined to attribute the phenomenon to the convulsions, and more specifically to the violent muscular contractions. Muscular work may also explain the difference between the quantities of blood uric acid in primiparous and multiparous women at the end of labor, but at present it is more in keeping with the behavior of the blood uric acid in general, to ascribe its retention after normal primiparal labor and in cases of toxemia to renal impairment.

TABLE III.—AMINO-ACIDS.\*

No.	Clinical diagnosis	Amino-acid nitrogen	Systolic blood pressure	Albumin-uria, per cent.	Delivery
	Normal pregnancy.....	8-14mg.	Mm. of hg. 120		
1	Preëclamptic toxemia....	12.6	150	Esbach 0.5	Spontaneous
2	Preëclamptic toxemia....	15.3	170	1.4	Forceps
3	Antepartum eclampsia...	13.2	155	0.6	Accouchement forcé
4	Antepartum eclampsia...	12.4	180	1.5	Accouchement forcé
5	Antepartum eclampsia...	17.9	200	0.6	Cesarean section
6	Intrapartum eclampsia..	19.1	200	2.0	Forceps
7	Nephritic toxemia.....	13.5	255	0.4	Vaginal hysterotomy

\* Analyses made by A. H. Morse.

Amino-acids which are best known as the end-products of protein digestion are also the nitrogenous substances assimilated in tissue metabolism. They must play a very important rôle during gestation

—a period dedicated to tissue growth and tissue-construction. To find, then, that the amount of these substances in the blood of pregnant and nonpregnant women is almost identical means nothing, if not an exquisite adaptation of the organism to the reproductive process. The quantity of amino-acids is also within normal limits in the presence of preëclamptic toxemia and eclampsia. Frequently, the quantity increases during the period of convalescence following the convulsions, but at that time an increase is ascribed not to metabolic errors but to the absorption of products of disintegration from the tissues involved by the hemorrhagic lesions in the liver and elsewhere.

Now, a normal quantity of amino-acids in the blood during preëclamptic toxemia, and even in eclampsia itself, indicates that these structural units of protein are promptly supplied to the tissues and adequately utilized, and therefore, that nitrogenous metabolism is proceeding along physiological lines. The same conclusion with regard to metabolism is reached if the argument is based upon the quantity of nitrogenous waste-products in the blood. Generally, though not invariably, the urea and uric acid are somewhat increased in eclampsia and allied intoxications, but these findings are explained by a retarded elimination.

If eclampsia were due to the retention of nitrogenous waste-products, the phenomenon would be constant, but this is not the case. On the other hand, a similar retention occurs in nephritis; which affects men as well as women, and, consequently nitrogenous retention is not a specific finding in the toxemias of pregnancy. The outstanding facts, then, teach that the alterations in the nitrogenous constituents of the blood are no more the cause of eclampsia than those of the urine; both must be numbered among the effects of the intoxication which impairs the capacity of the kidneys to function properly as a filter.

To recapitulate, the results of blood analysis give no indication of a derangement of protein metabolism in eclamptics. The nutritive nitrogenous substances, it is found, preserve their normal relationship. The excrementitious substances are those ordinarily met with and, though an abnormal retention of these waste-products is frequently observed, it is rarely to a degree as great as that in cases of acute nephritis independent of pregnancy. Thus far, then, the evidence from blood analysis not only fails to support the protein-metabolism hypothesis of the causation of eclampsia but favors its abandonment.

TABLE IV.—SUGAR.\*

No.	Clinical diagnosis	Per cent., blood sugar	Systolic blood pressure	Per cent., albumin	Delivery
	Normal pregnancy.....	0.09-0.11	125		
1	Preëclamptic toxemia....	0.082	160	0.1	Spontaneous
2	Preëclamptic toxemia....	0.105	205	0.4	Spontaneous
3	Antepartum eclampsia...	0.097	170	1.5	Accouchement forcé
4	Antepartum eclampsia...	0.128	190	3.75	Cesarean section
5	Intrapartum eclampsia (before).....	0.151	190	2.2	Forceps
	After convulsion.....	0.183	230		
6	Postpartum eclampsia...	0.136	180	0.6	Spontaneous
7	Postpartum eclampsia...	0.256	185	0.1	Spontaneous
8	Nephritic toxemia.....	0.221	255	0.4	Vaginal hysterotomy

\* Analyses made by W. H. Morriss.

While there is no good reason for suspecting a "cause and effect" relationship between carbohydrate metabolism and eclampsia, blood-sugar determinations are instructive as affording proof of this independence. Not only do we find the same concentration of sugar in the blood of nonpregnant and pregnant women but normal values also prevail in cases of preëclamptic toxemia. After

TABLE V.—FATS AND LIPOIDS.\*

No.	Clinical diagnosis	Fats	Choles- terol	Leci- thin	Systolic blood pressure	Per cent., albumin	Delivery
	Normal pregnancy..	870	240	317	120		
1	Preëclamptic toxemia.	995	174	260	160	Trace	Spontaneous.
2	Antepartum eclampsia.	830	210	277	220	0.2	Induction of labor.
3	Antepartum eclampsia.	980	192	231	140	0.6	Accouchement forcé.
4	Postpartum eclampsia.	1010	179	260	175	Trace	Spontaneous.
5	Nephritis.....	935	279	256	205	0.025	Induction of labor.
6	Nephritis.....	890	253	281	120	Trace	Induction of labor.

\* Analyses made by H. J. Stander.



convulsive seizures, hyperglycemia may be found and is admittedly due to the convulsions, though opinions differ as to whether the violent muscular contractions or the instability of the medullary center which regulates the concentration of sugar in the blood is directly responsible. High arterial tension, also, is frequently accompanied by hyperglycemia, and perhaps explains the latter phenomenon in some cases of nephritic toxemia.

For at least two reasons the fats and lipoids of the blood now attract workers in the field of the physiology of pregnancy. First, improved methods have been devised for the estimation of these substances; and second, the failure to demonstrate a causal relationship between protein metabolism and eclampsia has stimulated effort to learn what rôle, if any, fat-metabolism plays. As yet, the data is incomplete and final judgment must be deferred, but thus far our experience has not revealed any metabolic change serviceable as a diagnostic or therapeutic guide in cases of pregnancy-toxemia. The blood-fat, notably increased during the latter part of pregnancy, occurs in approximately the same amount whether the case be normal or complicated by autointoxication.

Cholesterol is also increased in the blood during normal gestation and usually large amounts are found in eclampsia but normal values

TABLE VI.—CARBON DIOXIDE COMBINING POWER.\*

No.	Clinical diagnosis	C.c. of CO <sub>2</sub> bound by 100 c.c. of plasma	Systolic blood pressure	Per cent., albumin	Delivery
	Normal pregnancy . . . . .	37-50.4	120		
1	Preëclamptic toxemia . . . .	50.0	170	1.4	Accouchement forcé.
2	Preëclamptic toxemia . . . .	43.9	130	Trace	Breech extraction.
3	Preëclamptic toxemia . . . .	37.4	135	0.05	Spontaneous.
4	Antepartum eclampsia . . . .	36.0	240	1.5	Cesarean section.
5	Antepartum eclampsia . . . .	35.6	200	Trace	Accouchement forcé.
6	Antepartum eclampsia . . . .	26.2	210	0.6	Cesarean section.
7	Nephritic toxemia . . . . .	32.6	225	0.4	Vaginal hysterotomy.
8	Nephritic toxemia . . . . .	46.6	255	0.5	Induction of labor.

\* Analyses made by W. H. Morriss.

obtained in three cases here recorded. Thus, a wider experience has taught that we were incorrect in supposing that the blood-cholesterol might serve to differentiate eclampsia from nephritis.

Lecithin, a lipid found in every cell, and presumably of fundamental importance in cell-life, is more abundant in the blood of pregnant than of nonpregnant women. On the other hand, typically, the values are low in preëclamptic, eclamptic and nephritic toxemia, but the number of cases studied has been small and we are not sure that there will be no exceptions to the rule.

The capacity of the plasma to combine with carbon dioxide is a convenient measure of the blood-alkalinity. Our findings confirm those of Emge, Losee and Van Slyke, and others which demonstrate that a mild acidosis is characteristic of normal pregnancy. Generally the values are not different in eclampsia. Obviously, therefore, an acidosis fails to explain a transition from healthful pregnancy to an autointoxication which threatens life.

#### CONCLUSIONS.

1. Analysis of the blood in cases of eclampsia and allied intoxications reveals a normal quantity of amino acids and a slight retention of nitrogenous waste-products, as urea and uric acid.

2. After convulsions there is an increase in the blood-sugar.

3. The total fat is approximately the same in cases of toxemia and of normal pregnancy. Usually the cholesterol is increased and the lecithin diminished in eclampsia.

4. The carbon dioxide combining power of the plasma is reduced during normal pregnancy, indicating a mild acidosis, and the variations met with in the presence of autointoxications are insignificant.

5. The results of blood analysis do not support the acidosis hypothesis nor the derangement of protein metabolism hypothesis of eclampsia and indicate that the cause of the disease must be sought elsewhere.

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## SURGICAL CONDITIONS COMPLICATING INTRAUTERINE PREGNANCY.\*

BY

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THE diagnostician of surgical diseases is frequently confronted with the necessity of making a decision in regard to the advisability of operation for conditions complicating intrauterine pregnancy. A question of possible or probable danger to two lives presents itself and every effort must be made to save the mother and child. As Andrews says, the life of the woman is paramount, but both must be considered even at somewhat increased risk to the mother.

It is not often that normal pregnancy is complicated by surgical conditions. In the three years from 1914 to 1916 inclusive, there were more than 10,000 abdominal operations on women at the Mayo Clinic, and in that number 253 pregnant women were found to have definite surgical lesions not dependent on, although associated with, the pregnancy. One hundred and thirty-eight of these were advised to have operations and 123 were operated on. The case histories of twenty-three were not considered on account of lack of subsequent data confirming the diagnosis of pregnancy, thus 100 cases only are

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reviewed in part in this paper. Of this number, sixteen women went to operation with pregnancy undiagnosed by the clinician. One of these had proceeded to a three months' gestation but the remainder were mostly under two months and were diagnosed by the surgeon at the time of operation. This diagnosis was later substantiated by reports from the patients except in three instances in which it was found to be erroneous.

During the same three-year period there were 130 pregnant women with surgical complications who did not come to operation. In this group are included only those cases in which the surgical pathology would warrant operation in the nonpregnant state. The surgical diagnosis was as follows:

PREGNANCIES WITH SURGICAL COMPLICATIONS—NONOPERATIVE.  
Surgical Diagnoses.

Appendicitis.....	31
Adenoma of thyroid.....	31
Cholecystitis.....	14
Fibroids.....	17
Gall-stones.....	15
Varicose veins.....	5
Ovarian tumor.....	1
Hemorrhoids.....	3
Perineal laceration.....	3
Adenoma of breast.....	2
Exophthalmic goiter.....	2
Salpingitis.....	2
Uterus, prolapse of, cystocele.....	2
Cervical laceration.....	2
Cervical polyp.....	1
Perineal relaxation.....	1
Hodgkin's disease.....	1
Gastric ulcer.....	1
Tuberculosis of spine.....	1

In fifty-six of this group the pregnancy was under three months, in sixty-one it was between three and five months, and in thirteen it was more than five months. The 100 cases coming to operation have been listed according to surgical conditions found at operation.

Appendicitis in pregnancy is a frequent occurrence and is most dreaded on account of its danger to mother and child. Paddock, quoting Schmidt in 1911, says that 2.5 per cent. of women having appendicitis are pregnant and 1 per cent. of all pregnant women complain of or suffer from appendicitis. This percentage agrees with our statistics, that is, fifty-seven (1.9 per cent.) in pregnant women out of some 3000 cases of appendicitis in women operated



## PREGNANCIES WITH SURGICAL COMPLICATIONS—OPERATIVE.

## Surgical Diagnoses.

Appendicitis.....	57
Cholecystitis and cholelithiasis.....	26
Fibroids.....	3
Adenoma of thyroid.....	4
Exophthalmic goiter.....	4
Tumor of breast.....	3
Hernia, inguinal.....	4
Duodenal ulcer.....	2
Salpingitis.....	2
Exploration.....	2
Carcinoma of breast.....	2
Retroversion of the uterus.....	2
Ventral hernia.....	1
Ovarian tumor.....	5
Pyonephrosis with stone.....	1
Ovarian and tubal abscess and stones in the common duct following cholecystectomy.....	1
Cyst of submaxillary gland.....	1
Laceration of the perineum.....	1
Abscess of the right cheek.....	1
Anal fistula.....	1
Hemorrhoids.....	1
Tumor of left antrum.....	1
Mixed tumor of the right parotid gland.....	1
Osteomyelitis.....	1
Sterility (Pozzi operation).....	1
Epithelioma of arm.....	1

on during the three-year period. The incidence of appendicitis is not higher during pregnancy than at other times, but a woman having had attacks of appendicitis is apt to have a lighting up of the condition during an ensuing pregnancy. De Lee asserts that this fact in itself should not necessarily indicate operation unless the patient's condition, or further attacks, make it advisable.

An acute attack of appendicitis during pregnancy calls more imperatively for operation than an attack during the nonpregnant state. The danger of abortion or general peritonitis following ruptured appendix in these cases is greatly increased and the mortality rate is higher. Murphy advised immediate operation, and quoted Wagner as estimating a 77 per cent. mortality in the cases of acute appendicitis in which operation was not done. Most of our cases (twenty-seven) in which operation was done were of the interval type, and it is in this group, when immediate operation is not imperative, that decision is most difficult.

We have endeavored to determine the relative safety of the operation for both mother and child, and the condition of the mother and child after delivery. In the 100 cases there were 9 miscarriages, 2 of which were terminal events with the death of the patient from other causes. A conservative estimate would indicate that every fifth or sixth pregnancy in private practice ends in abortion (Williams). It is of interest to note in our series that 1 miscarriage occurred after appendectomy for acute appendicitis, 1 after a gall-bladder and appendix operation, 3 after single ovariectomy and appendectomy, 1 each after enucleation of a uterine fibroid tumor and thyroidectomy for simple goiter, and 2 (with death of the patient from peritonitis and pneumonia in 1 case and acute terminal nephritis and general peritonitis in the other) following gall-bladder and appendix operations. Four of the miscarriages occurred in gestations under two months, 2 at two months, 2 at three months and 1 at four months. Therefore, of the 50 patients operated on within a three months' gestation there were 7 (14 per cent.) miscarriages; of 45 patients between three and five months, 2 (4.4 per cent.) miscarriages. There were 5 pregnancies of more than six months in which there were no miscarriages.

The complication second in frequency to appendicitis is gall-bladder trouble. Of 2215 women having gall-bladder operations during this period twenty-six (1.17 per cent.) were pregnant. The patient having cholecystitis or gall-stones which are not producing dangerous symptoms should not be operated on during pregnancy. In the twenty-six gall-bladder operations in our series two patients died and one miscarried, a percentage which might not be so high in a larger group of cases.

Pelvic tumor is a very important surgical complication. There were eight such, associated with pregnancy in the patients operated on, and eighteen in the patients not operated on. The decision of the operator in such instances will depend largely on the nature of the tumor. Unless a fibroid tumor is in a position to obstruct at the time of delivery, or is producing dangerous symptoms, it should not be disturbed during pregnancy. If it is in a position to obstruct, a Cesarean section at term is probably the safest procedure.

Lockyer writes: "The indications for myomectomy on the gravid womb must be few, and this operation has been performed possibly more often than would be deemed justifiable." On the other hand, Davis, Kosmak, and others have reported successful operations followed by the delivery of normal children at term. Richardson stated that in his experience in every instance in which it seemed

necessary to remove a fibroid from the pregnant uterus, the operation was successful and the growth and birth of the child were not interfered with. Of the twenty patients with fibroid tumor and pregnancy examined in the Clinic during the three-year period, only three were operated on and one of these miscarried.

Ovarian tumor as a complication is considered with much graver concern. In such tumors trouble may occur by a twisting of the pedicle, causing rupture and producing abortion, or obstructing delivery. In 1916, Beach reviewed the subject exhaustively. He quoted from an article of Patton's published in 1906 in which 321 cases were reported. In twenty-four of these there was torsion of the pedicle, and of ninety-five patients treated expectantly there was a maternal mortality of 26.3 per cent. against a mortality of 4.3 per cent., in 184 patients operated on. The miscarriages were about equal, 18.9 per cent. in the former, and 19 per cent. in the latter. Barrett reported thirty-eight patients not operated on before term, with a maternal mortality of 18.4 per cent. as against seventy-six patients operated on with a maternal mortality of 2.6 per cent. In those treated expectantly there was 18 per cent. of abortions and only 12.3 per cent. in those operated on. Barrett advises early removal of the tumor because of the good results to both mother and child and the lessened danger at labor. He further states that even during the latter half of pregnancy the results are such as to warrant the removal. In eight of his cases of double ovariectomy six went to term. This would seem to disprove the idea that the internal secretion of the corpus luteum is necessary to the normal continuance of pregnancy.

There were six ovarian tumors in our 253 cases. Five of these were operated on, a single ovary being removed in each case. In one other case an abscessed ovary and tube were removed. A miscarriage followed in this and in two other cases. In one case in which a diagnosis was made of pregnancy associated with a large uterine fibroid, the patient was found to have an ovarian cyst at operation eight weeks after a normal delivery. Other operations were amputations of the breast, nephrectomy (one), hemorrhoidectomies, partial thyroidectomies, and in one case an operation on the cervix. This patient was sent in with a diagnosis of sterility, having had an apparently normal menstrual period three and one-half weeks before. Notwithstanding a Pozzi operation, an early pregnancy was not interrupted and the patient went to a normal delivery.

Two radical breast amputations for carcinoma were performed, one at six and one-half months, and another at seven months, without

interruption of pregnancy. In three other patients an adenoma was removed from the breast. None of these miscarried.\*

A nephrectomy for tuberculous kidney was performed without mishap. Schmidt reviews Hartman's thirty cases of nephrectomy and five additional from the literature. There was a maternal mortality of two (5.7 per cent.), known normal labor in twenty-one, and death of the fetus in 15 per cent. of the cases. Harrington and Beer each report a nephrectomy followed by normal labor at term.

Very rarely is a thyroid operation indicated during pregnancy. Of thirty-five pregnant women with adenoma of the thyroid examined, thirty-one were advised to delay operation until after confinement. Of six patients with exophthalmic goiters, four were operated on but in one patient only was a primary thyroidectomy done. The total number of women with exophthalmic goiters examined was 1055, of whom six or about one-half per cent. were pregnant. Of the total number of 2404 women with simple goiters, only thirty-five (1.4 per cent.) were pregnant.

#### CONCLUSIONS.

1. Any operation which can be postponed until after confinement, should not be done during pregnancy.
2. When necessary, operations for appendicitis can be done without undue risk to mother and child.
3. It is rarely necessary to operate for fibroid tumors complicating pregnancy, but when operation is necessary, it is associated with little danger.
4. The removal of an ovarian cyst during pregnancy is less dangerous to the mother than is expectant treatment.
5. While the time most favorable for operation is believed to be in the first half of pregnancy, when necessary, it can be done later.

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# FURTHER OBSERVATIONS ON ACIDOSIS IN PREGNANCY (WITH SPECIAL REFERENCE TO THE CO<sub>2</sub> METHOD OF VAN SLYKE).\*

BY

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NOTWITHSTANDING a myriad of contributions to the general subject of acidosis, there have been comparatively few investigations on acidosis in pregnancy. As early as 1902, Stolz(6) reported his observations on acetonuria in pregnancy, yet his studies did not include the blood and so, properly speaking, do not belong in this category. The bibliography of acidosis in pregnancy dates from 1903 with Zangemeister's(9) studies on the alkalinity of the blood of gravid women. This interesting work, however, was completely overshadowed by the more extensive investigations of Zweifel(10) beginning in the following year and continuing for two years later, to which most workers refer as the beginning of the modern work. This investigator finding an increase of lactic acid in the blood three times as marked in the fetus as in the mother concluded that eclampsia was an intoxication from an overproduction of lactic acid in the fetus, an observation which has not received the confirmation of other observers. Although eclampsia was the subject of many remarkable investigations, until 1914 there were no contributions of importance save for the work of Hasselbalch and Gammeltoft(5), a contribution which can be criticized only because of the limited number of cases forming the report. The paucity of literature on this extremely interesting subject has been in large part due to the cumbersome and expensive methods of investigation. With the advent of Van Slyke's(7) method of studying the alkalinity of the blood by reading of the carbon dioxide tension, the field has been opened up anew. In 1916, we(2) reported our investigations of the carbon dioxide tension of the blood of 68 normal uterine pregnancies. We found that there was normally an acidosis of varying degree which disappeared shortly after parturition.

This work, as we then stated, was in reality a preliminary report to be followed shortly by a study of the carbon dioxide tension of the blood in the various toxemias of pregnancy and during normal menstruation. Van Slyke's method, at this time, had not been published

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in detail but had been given out in manuscript by the author in order to give opportunity for additional observations before the appearance of the published report. The original instructions(7) demanded that the blood should be drawn into a test-tube containing potassium oxalate crystals and centrifuged immediately, after which the clear plasma should be drawn off according to definite instructions. According to this technic, the plasma of normal adults had revealed 0.65 to 0.90 c.c. of gas, indicating 52 to 77 volume per cent. of carbon dioxide which was chemically bound in the plasma. Figures lower than 50 per cent. were deemed indicative of acidosis in the adults.

The material for our present study comprises twenty-one cases of various toxemic disturbances in pregnancy and ten normal menstruating women. We have divided them into four groups, viz. (1) eclampsia and preëclamptic toxemias; (2) nephritis of pregnancy; (3) excessive vomiting of pregnancy, and (4) menstruation of normal women. The first three groups are considered in the following tables.

TABLE I.

THE CARBON DIOXIDE TENSION IN PREËCLAMPTIC TOXEMIAS AND ECLAMPSIA.  
*Case Reports.*

U. C. H. No.	Para, Age, Months of Pregnancy, Blood Pressure, Explanatory Remarks	C.c. of CO <sub>2</sub> bound by 100 c.c. of plasma
13201	Para-i, 22, at term, blood pressure 160-120, general diet, albumin triple plus, no casts, no edema under analgesia for 30 minutes. First convulsion 15 minutes postpartum, 6 convulsions within following 7 hours. Blood tested 1 hour after last convulsion.....	29.4
	Same patient: bled 500 c.c., hypodermoclysis, blood tested again after 4 hours.....	33.8
	Para-ii, 24, 35th week, blood pressure 230, under treatment for toxemia for 4 weeks previously. Vaginal Cesarean section 2 hours after first convulsion, under ether anesthesia for 1 hour. Blood obtained 30 minutes after beginning of anesthesia.....	36.6
11885	Para-iii, 23, 7th month, blood pressure 145-95, no albumin, no casts, general diet, no edema, 2½ months before labor.....	46.0
	Same patient at term, blood pressure 150-110, under observation for preëclamptic toxemia, albumin double plus and casts, edema of limbs, blood examined after 5 hours of labor which was induced by bag without anesthesia. Had convulsion 2½ hours postpartum. Five hours after, blood was withdrawn for study....	40.2

TABLE I.—*Concluded.*

THE CARBON DIOXIDE TENSION IN PREËCLAMPTIC TOXEMIAS AND ECLAMPSIA.  
*Case Reports.*

U. C. H. No.	Para, Age, Months of Pregnancy, Blood Pressure, Explanatory Remarks	C.c. of CO <sub>2</sub> bound by 100 c.c. of plasma
13305	Para-i, 16, at term, general diet, albumin and casts, edema of limbs, blood pressure 200-150. Blood tested after 3 days' conservative treatment.....	41.6
	After this time, blood pressure rose to 180-120 before induction of labor by bag. Blood tested immediately. Two convulsions intrapartum.....	39.4
13587	Para-i, 18, at term, blood pressure 170-85, marked edema, marked albumin and many casts, severe epigastric pains, no previous treatment, blood examined 24 hours before Cesarean section. No convulsions..	40.1
13447	Para-i, at term, blood pressure 135-95, albumin and casts, edema of limbs, general diet, not treated, normal labor, 1 convulsion 20 minutes postpartum, blood tested 1 hour later.....	41.6
Dr. R. K. S.	Para-iii, 36, at term, blood pressure 180-120, marked general edema, albumin and casts, not treated, one convulsion before vaginal Cesarean section. Blood tested in beginning of operation after 10 minutes of anesthesia.....	44.5
13808	Para-o, 25, at term, blood pressure 120-60 to 130-85, under observation for preëclamptic toxemia, edema of limbs, albumin, no casts, nephritic diet for 1 week. Blood tested 36 hours before labor was induced by bag. No convulsions.....	45.1
11775	Para-ii, 25, 2 weeks premature, blood pressure 185-100, slight general edema, albumin and casts, general diet, not seen previously. Blood tested 24 hours postpartum only. Ultimate diagnosis "Kidney of Pregnancy".....	46.2
11264	Para-ii, 25, at term, blood pressure 165-115, edema of limbs, albumin and casts, general diet, not treated. Blood tested 2 hours before induction of labor by bag. Normal delivery, one convulsion 1 hour postpartum, blood examined 4 hours later.....	48.0 49.0



TABLE II.

THE CARBON DIOXIDE TENSION IN NEPHRITIC DISTURBANCES DURING PREGNANCY.  
*Case Reports.*

U. C. H. No.	Para, Age, Months of Pregnancy, Blood Pressure, Explanatory Remarks	C.c. of CO <sub>2</sub> bound by 100 c.c. of plasma
12062	Para-i, 22, under observation for high blood pressure and albuminuria without casts and edema. 34th week, blood pressure 160-100, nephritic diet and rest.....	46.8
	37th week, blood pressure 140-100, strict milk diet and rest.....	42.5
	24 hours later, blood pressure 125-95.....	40.0
	39th week, blood pressure 105-70, under milk diet, delivered at term with return of blood pressure to normal.....	43.1
13476	Para-ii, 18, at term, albumin and few hyaline casts, blood pressure 150-105, no edema, not treated previously, normal delivery, blood tested 1 week before labor.....	44.4
13649	Para-xii, 42, at term, blood pressure 196-128, marked albuminuria and many granular hyaline casts, edema of limbs, not treated previously, general diet, normal delivery. Blood tested 24 hours before labor.....	44.5
13419	Para-i, 19, at term, blood pressure 150-110, albuminuria, no casts, edema of ankles, not treated previously, normal delivery. Blood tested 2 weeks before labor.....	46.2
13418	Para-ix, 32, 3d month, blood pressure 175-120, marked albuminuria, few granular casts, no edema, old nephritic patient of clinic. Blood tested two days before interruption of pregnancy.....	48.0
13486	Para-ii, 32, 7th month, blood pressure 200-130, very marked albuminuria and many granular and hyaline casts, much general edema, under nephritic treatment for years.....	51.95
13104	Para-iv, 43, 9th month, blood pressure 158-100, no albumin (present previously), hyaline casts, slight general edema, under treatment previously, general diet.....	43.9
	After 10 days' rest and milk diet.....	46.8

TABLE III.

THE CARBON DIOXIDE TENSION IN EXCESSIVE VOMITING IN PREGNANCY.

*Case Reports.*

U. C. H. No.	Para, Age, Months of Pregnancy, Blood Pressure, Explanatory Remarks	C.c. of CO <sub>2</sub> bound by 100 c.c. of plasma	Total NH <sub>3</sub> in 24 hours in urine
11665	Para-iii, 34, 10th week, blood pressure 112-80, habitual vomiting for 1 week with tendency to pernicious vomiting. Patient left hos- pital because abortion was refused. . . . .	45.2	1.43
	Same patient 3 weeks later with symptoms greatly aggravated, quite emaciated, had been starving herself, blood pressure 110-80.	35.6	2.29
	Patient refused care and was lost sight of.		
13075	Para-i, 20, 9th month, blood pressure 95-70, albumin trace, no casts, excessive vomiting for several days; symptoms due to dietary indiscretions. . . . .	45.8	0.65
13185	Para-iv, 23, 3d month, blood pressure 95-60, excessive vomiting for 2 weeks. Symp- toms found to be due to duodenal ulcer, cleared quickly under milk and alkaline treatment. . . . .	46.0	0.459
	Same patient 1 week later. . . . .	45.6	0.210
Dr. R. K. S.	Para-ii, 39, 1½ months, excessive vomiting for several weeks. Had been under alkaline medication and rest for 1 week when blood was tested. . . . .	61.3	

## COMMENT ON TABLES.

*Group 1.*—On reviewing these tables, the fact stands out most clearly that the great majority of all the readings fell within the limits which we have found in normal cases. More careful scrutiny suggests that the majority of readings in the eclamptic toxemias range around forty, while that obtained in the nephritic toxemic group is nearer to forty-five. We lay no great emphasis upon this apparent variation because it is slight and not constant and quite possibly is influenced by the varying conditions of the patient at the time the blood was drawn. Thus, in Case I, the patient had had seven severe convulsions before the blood was tested. In Case II, the blood was drawn at the end of one-half hour of ether anesthesia. In Cases IV, V and VI, the blood was obtained fairly late in labor and it would appear, if we may be permitted to judge from as few as six cases, that the blood drawn during labor is fairly low, running for these six cases between thirty-seven and forty. Indeed, it well

may be that the great muscular exertion of labor adds to the acidosis since we all know that there is a liberation of sarcolactic acid as a result of increased muscular activity. And if such is the case, why should we not find a similar condition resulting directly from the muscular activity during convulsions. The ether anesthesia in Case II may well explain the low reading from the blood of this patient. This case had one convulsion prior to the operative interference which also might have influenced the low reading. Yet the influence of anesthesia alone is shown by the work of Austin and Jonas<sup>(1)</sup> who found that ether anesthesia depressed the CO<sub>2</sub> capacity in the blood from 2 to 20 volumes per cent., most marked at the end of the anesthesia and remaining low for five hours.

*Group 2.*—The records of the seven nephritic cases of Table II suggest that nephritis does not alter the normal CO<sub>2</sub> capacity found in normal pregnancies.

*Group 3.*—We regret that the four cases grouped as excessive vomiting in pregnancy were not of the most marked type. Indeed, the vomiting of one case was due undoubtedly to duodenal ulcer. The symptoms in none of these cases were severe enough to suggest abortion as a therapeutic measure. The ammonia content of the urine was estimated in three cases and in only one case was it more than normal (2.3 grams in Case I), three weeks after she had abandoned the treatment outlined at the hospital. If we may be permitted to make any observation from this small group of cases, we would state that the CO<sub>2</sub> capacity of the plasma appears to be dependent upon the severity and duration of the nausea and vomiting. This is fairly well shown by Case I. The second case of this group does not in reality belong here since it was one of vomiting of a few days duration due to dietary indiscretion in the ninth month of pregnancy. We record it here because there had been severe vomiting for several days. The fourth case of this group is of interest in that the pregnancy was of six weeks' duration and vomiting had been present for two or three weeks. This patient had been under treatment during the entire period of vomiting with large doses of alkalis. The blood reading is the highest of the series.

*Group 4.*—The blood of ten apparently normal menstruating women gave an average reading of 53.50 volume per cent. CO<sub>2</sub>. Six of these cases were observed for two periods. The method of investigation employed here was also that originally described in 1915 and used in our first report save that the centrifuge tubes were stoppered as soon as the blood was collected.

Since our first report in 1916, the Van Slyke method(8) has been changed so that the blood is now drawn under oil to prevent any loss of  $\text{CO}_2$  by exposure to the air. Unfortunately, this improvement was not suggested until our study was nearly complete. There is no doubt that the method is greatly improved by this modification. Gürber(3) in 1895 showed that a shift of the alkali from the plasma to the corpuscles results when the whole blood loses  $\text{CO}_2$ , thus causing a decrease in the alkalinity of the plasma. Austin and Jonas(1) and Van Slyke and Cullen(8) have confirmed this finding. The latter found that when blood was drawn into open tubes and centrifuged without previous shaking, the  $\text{CO}_2$  capacity of the plasma is some 5 volume per cent. less than when it is collected and centrifuged under oil. Austin and Jonas(1) showed that agitation of the whole blood still further decreases the alkali content of the plasma. They find that constant pouring through the air reduced the plasma  $\text{CO}_2$  to two-thirds of its normal value.

We found in our first report that the volume per cent. of  $\text{CO}_2$  chemically bound by the plasma in normal pregnancy varied from 31 to 59.40 for a series of 68 cases. The majority of readings lie between 42 and 52. We are unable to find that the conditions of multipara, age, vomiting, or period of gestation influenced the degree of acidity. Since this time, report of plasma readings of a small number of cases of normal pregnancy and toxemias has been published by Losee and Van Slyke(5). They obtained 49 as their lower limit and 63 as their upper for normal pregnancies and 41 and 58 for the toxemias. In our normal series, this range was considerably wider. In the light of work published since our report, we think it highly probable that the variations between our findings and those of Losee and Van Slyke were due largely to the difference in method of collecting the blood and in smaller amount to the variations which may be expected in a larger series of cases. In our earlier work, we made no effort to protect the blood from the air and in no case did we collect it under oil or with other special precautions.

In the fifth group we stoppered immediately with a rubber cork the tubes into which the blood was collected and compared the readings with those from the same cases where the blood was drawn under oil. The result is clearly shown in Table IV. There is no doubt that even stoppering the tubes limits the loss of  $\text{CO}_2$  but not as completely, as with the use of the oil method. It might be urged, therefore, that these results are of little value because of the method employed in our study. Yet we feel that it is merely necessary



to call the student's attention to the fact that the chief value of this type of investigations lies in the comparison of the results noted in various dissimilar groups of similar cases, studied with identical methods.

TABLE IV.

COMPARISON BETWEEN THE CO<sub>2</sub> TENSION OF THE PLASMA FROM BLOOD COLLECTED UNDER OIL AND FROM BLOOD KEPT IN STOPPERED TUBE.

Oxalated Stoppered Aerated	Cc. of CO <sub>2</sub> bound by 100 c.c. of plasma		Difference
	Oxalated Collected	Oxalated under oil-aerated	
42.5	44.4		+1.9
39.5	44.3		+4.8
36.6	36.6		0.0
46.2	48.0		+1.8
48.0	46.2		-1.8
41.6	40.8		-0.8
44.4	40.5		-3.9
51.95	51.95		0.0
40.1	41.1		+1.0
44.5	46.5		+2.0
45.1	46.0		+0.9
45.8	46.8		+1.0

## CONCLUSIONS.

We believe that the following postulates obtained as a result of our study may be stated:

1. That menstruation does not alter the alkaline balance of the blood in normal women, as shown by the CO<sub>2</sub>.
2. That labor increases the acidity of the blood by reason of the attendant muscular exertion.
3. That the acidity of the blood in eclampsia increases in proportion to the severity and number of convulsions, again pointing to the influence of muscular exertion.
4. That the acidosis of the toxemias of pregnancy is usually only equal to that noted in normal pregnancy.
5. That anesthesia and starving both depress the CO<sub>2</sub> content of the blood.
6. That the blood collected in open tubes will give lower CO<sub>2</sub> readings than that collected under oil.

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## GALL-BLADDER DISEASE COMPLICATING PREGNANCY.\*

BY

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UNLESS one has seen cholelithiasis or cholecystitis complicating pregnancy these conditions are not apt to receive much consideration. When either condition presents itself, problems arise, the decision of which may save or destroy one or two lives.

Comparatively little has been written concerning conditions of the gall-bladder complicating pregnancy, whereas much has been written concerning appendicitis complicating pregnancy. It is my impression that such is the case not because appendicitis is a more frequent complication of pregnancy, but because gall-bladder disease either passes unrecognized, or when recognized is not considered, to be always a surgical condition.

Little is said in the text-books about cholelithiasis and cholecystitis during pregnancy. DeLee and Cragin give as much detail as any of the authors read. Cragin's text is based on a paper read by Reuben Peterson before the American Gynecological Society in 1910, and so far as I have been able to find this is the only complete résumé of these conditions complicating pregnancy that has been made up

\* Read at a meeting of the Brooklyn Gynecological Society, January 4, 1918.

to that time or since. Peterson reports twenty-five cases complicating pregnancy and ten cases complicating the puerperium. He reports only cases of proven diagnosis by operation. In the discussion of this paper four operative cases of cholelithiasis were reported. Unfortunately many details are lacking in the reports of these four cases. Two were operated at four months' gestation and went to term, one at five months' gestation and went to term. One was operated at two months' gestation and aborted one month later, whether as a result of the operation is not stated. These are all the particulars given.

Branson reports four cases in three of which gall-stones were found in the feces. None of these cases were operated and they all went to term.

Burke reports four cases of cholelithiasis and all were operated. They all had pain, vomiting and jaundice. No statement is made as to the location of the stones. Two were operated at two months' and one at three months' gestation. These three cases went to term. The fourth case delivered herself during the attack and was operated ten days postpartum. This patient died. Whether she was at term is not stated.

Watson reports three cases of cholelithiasis during pregnancy which were not operated and went to term. One was operated one year later and died.

Finkelstein reports a case of cholelithiasis which was aborting when he first saw her at three and one-half months' gestation. The gall-bladder condition cleared up after the uterus was empty. In her next pregnancy this woman was operated at seven months' gestation for gall-stones and went to term. This patient was never jaundiced.

Moulden reports a case of empyema of the gall-bladder complicating pregnancy at the sixth month. The gall-bladder was opened and drained and pregnancy continued to term. The gall-bladder was removed at a later period.

Before discussing my subject further I desire to report a case of cholecystitis complicating pregnancy at term.

Mrs. F. S., aged twenty-two, Austrian, married one year. Family history has no bearing upon present condition. Past history. During 1910, at the age of seventeen, patient had an attack similar to that from which she is now suffering, namely: pain in the right hypochondriac region, vomiting and jaundice. She was admitted to the Jewish Hospital at that time and operated for gall-stones. A number of stones were removed. Two weeks following this operation the patient became suddenly jaundiced. She was again operated

and bands of adhesion were found to be the cause of the obstruction. These adhesions were freed and the woman made a complete recovery. These statements were verified by communicating with the Jewish Hospital.

Five years later, on November 10, 1915, this woman was admitted to my service at St. John's Hospital supposedly in labor. She gave the following history: This was her first pregnancy and she had last menstruated sometime in February, 1915. Vomiting had been more or less persistent throughout pregnancy but had been much more severe during the past few weeks. Six weeks before admission she began to have pain in the region of the gall-bladder, this pain gradually spread over entire upper abdomen. Soon after the onset of the pain the patient began to notice jaundice. The pain and jaundice became progressively worse, the former so much so that the woman actually thought herself in labor.

On examination the following conditions were found: the skin and conjunctivæ were moderately jaundiced. The uterus was enlarged to full-term pregnancy; fetal movements could be felt and the fetal heart was heard to the right and below the umbilicus, rate 148. No rigidity of the recti muscles could be elicited, but there was marked tenderness on slight pressure over the gall-bladder. Vaginally: The perineum was very firm; the cervix was long and hard; the os admitted only the tip of the finger and the fetal head was engaged at the brim. There was no evidence that the woman was in labor. Temperature 99.2°, pulse 90, respirations 25.

There seemed to be no immediate need for interference and it was decided to wait, hoping that labor might come on. In the meantime a blood examination showed 7800 white cells; polynuclears 77 per cent., large mononuclears 17 per cent., lymphocytes 4 per cent. and eosinophiles 2 per cent. The urinalysis was as follows: color: reddish brown; reaction: acid; specific gravity 1026; albumin and sugar negative; reddish deposit; uric acid crystals; bladder and kidney epithelium; bile: present.

At the end of twenty-four hours the patient's condition became grave. She appeared to be in a state of collapse. Her temperature was 100.4°, pulse 160, respirations 60. At this time the attending surgeon at St. John's, Dr. Delatour, was asked to see the case with me. It was decided that the gall-bladder condition should be relieved at once but that nothing could be done until the uterus was emptied. It was felt that whatever was done must be done quickly; consequently the usual means of cervical dilatation and induction of labor were discarded, and vaginal hysterotomy was discarded because of the size of the child. In spite of the danger of infection, an abdominal hysterotomy was considered advisable. At this time fetal movements could not be felt and the fetal heart was not heard.

The hysterotomy was done through a high right lateral incision and the only point of interest was the difficulty experienced in getting the uterus to contract. The child was stillborn.

After I had finished suturing the uterus, Dr. Delatour enlarged



my incision upward and exposed the gall-bladder. It was about three times its normal size and there were many firm adhesions involving the gall-bladder, duodenum, stomach and pancreas. These adhesions were broken up. An aspirating needle was then inserted into the gall-bladder and several ounces of mucopurulent bile withdrawn. An incision was now made and a search made for stones, but none were found. A drainage tube was sutured into the gall-bladder.

The drainage of bile ceased at the end of twenty-nine days, and at the end of thirty-five days, the wound was entirely closed and the patient left the hospital, having had an uneventful convalescence.

A pure culture of bacillus pyocyaneus was obtained from the gall-bladder contents.

It seems reasonable to believe that disease, or potential disease, of the biliary passages is a fairly common complication of pregnancy. Gall-stones occur three or four times as frequently in females as in males, and Osler says that 90 per cent. of women with gall-stones have been pregnant. This being the case the question arises: Why should pregnancy favor the development of gall-bladder disease?

Whether human bile is ever absolutely sterile is a question still under discussion. But it has been proven by experimentation that an artificial stasis of bile causes it to become infected, and gall stones may eventually be expected where infected bile exists. It has been shown by Goldsborough and Ainley that elimination is always slower during the pregnant than in the non-pregnant state. It is quite the usual thing for the pregnant woman during the first few weeks of her pregnancy to have manifestations of disordered digestion and nutrition, and it is well known how readily these cases may pass into a toxic state, the toxemia of pregnancy, with an accompanying jaundice. May it not be the fact that after all the so-called physiological vomiting of pregnancy is not physiological, but rather always a manifestation of a toxic state and an indication that the digestive apparatus, perhaps especially the liver, is on the verge of giving way under the work required of it.

Many women become moderately jaundiced during the early months of pregnancy without any definite symptoms of either gall-bladder disease or toxemia of pregnancy, but that it is the result of a toxic condition there can be but little doubt. Rolleston reported a case in 1910 in which the woman became jaundiced in four successive pregnancies. He attributed the jaundice to a toxic condition. England in the same year reported a case of jaundice of doubtful origin with a fatal termination. Phosphorus poisoning was suspected, but the pathologist's report gave as the cause of death, eclampsia. Again, in the cases reported by Peterson, at least half were jaundiced in spite of the fact that the common duct was not occluded. In explanation of this Peterson says: "It would appear as if this high percentage of jaundice where pregnancy is complicated by gall-stones can only be explained by the tendency of pregnancy to produce jaundice in a constitutional way, without the aid

of obstruction in the shape of calculi." Since we are familiar with jaundice in toxic states of pregnancy, but not with constitutional jaundice, it seems logical to at least suspect that the jaundice in such cases may be due to some liver derangement, if not an infection of that organ, particularly since gall-stones were in the gall-bladder and in some cases pus as well.

In late pregnancy, when the pregnant uterus becomes an important abdominal organ, pushing all before it as it enlarges and constantly increasing intraabdominal pressure, conditions would seem to be ideal for the development of gall-bladder disease. Add to this the wearing of tight corsets, the usual sedentary habits of the latter months of pregnancy and the frequent constipation, and the wonder is that so many women go through pregnancy without some derangement of the biliary passages. For all of these conditions tend to cause biliary stasis with possible resulting infection.

The diagnosis of gall-bladder disease during pregnancy ought not to be difficult. It might be confused with appendicitis, but what is more likely, it might be mistaken for toxemia of pregnancy in the early stages. Postpartum it has been mistaken for puerperal sepsis.

*Treatment.*—It is a fact that pregnancy brings with it the danger of gall-bladder disease either during the pregnancy or subsequently, cannot much be done in the way of prophylaxis? Let us not look upon pregnancy as a physiological state, but rather one in which grave conditions may develop either immediately or subsequently because of the pregnancy. I will not dwell upon prophylactic measures, they will be evident to you, and include dress, exercise, elimination and diet.

With definite symptoms of cholelithiasis or cholecystitis what shall the treatment be? The rational procedure is to treat these conditions in a surgical manner, regardless of the period of gestation. This seems to be in the best interest of mother and child. If we believe gall-bladder disease to be an infective process, it is reasonable to treat it as we would other infections, that is surgically. The reported cases which have died have all been operated when the symptoms have been far advanced or when the cases have been held over until the puerperium for operation. As to the child, a very small percentage of the cases have aborted, and in my own case, if operation had been performed at once instead of waiting twenty-four hours, in all probability the child would have survived.

There is no more reason to fear a termination of pregnancy in operations upon the gall-bladder than in any other operation. In this connection Richardson says: "In reviewing my experience with the surgery of the pregnant uterus, I am chiefly impressed by the tolerance of the pregnant uterus to surgical operations and general anesthesia. I have had now many experiences which tend to show that most operations and general anesthesia do not interrupt pregnancy."

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## TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

### SECTION ON OBSTETRICS AND GYNECOLOGY.

*Stated Meeting, Held December 27, 1917.*

DR. GEORGE W. KOSMAK, *in the Chair.*

*(Continued from the April number.)*

DR. JAMES A. CORSCADEN presented a

#### SPECIMEN FROM AN AUTOPSY EIGHTEEN MONTHS AFTER PERCY CAUTERIZATION FOR CARCINOMA OF THE UTERUS.

The clinical history of this patient shows that she was first admitted to the Presbyterian Hospital on March 15, 1916, and discharged on April 24, 1916. She was again admitted on August 17, 1917, and died September 20, 1917. Her chief complaint was metrorrhagia. She had had no children. Her present complaint dated back nine years. Three weeks before the first admission and nineteen months before her death she exerted herself more than usual and precipitated a vaginal hemorrhage. This was severe



and continued several days, then ceased and recommenced a week before admission.

Physical examination revealed two old scars, one low median and an oblique inguinal scar. The cervix was the site of a large, irregular, soft, vascular mass. This was located on the posterior lip of the cervix, and extended almost completely around it. There were three scattered hard nodules in the vault of the vagina. The operations performed were an excision of a specimen from the cervix, ligation of the internal iliacs, double salpingo-oöphorectomy, and a Percy cauterization. The pathologist's report stated that the specimen from the tube showed follicular cysts of the peritoneum. Specimens from the cervix showed carcinoma of the cervix.

The patient was kept in the hospital five weeks after the operation, when she went home much improved in every way.

The patient returned to the hospital on August 17, 1917. She stated that she had had backache from the time of her previous discharge up to three months before this admission (four months before her death) when it disappeared. The abdomen had gradually increased in size and pain was severe all over the abdomen. The treatment was confined first to attempts to relieve the distention. This proved useless, and then recourse was had to the constant administration of morphine. The patient gradually became weaker and died on September 20, 1917. The temperature during the last week varied from 100° to 103° F. The pulse remained above 100 during her entire stay in the hospital. The urine showed a trace of albumin and a specific gravity of 1026. The clinical diagnosis was carcinoma of the uterus and intestinal obstruction.

*Autopsy Findings.*—The autopsy was restricted to an abdominal incision. The body was that of a middle-aged woman. It measured 155 cm. in length and showed extreme emaciation. The abdomen was very much distended, the girth at the umbilicus being 78.5 cm. The breast tissue was practically absent. The cheeks and supra- and infraclavicular fossæ were greatly depressed. The abdominal wall was greatly thinned out and showed a median incision which was healed and evidently of some age. On opening the abdominal cavity the large and small intestines were found greatly distended with gas. On one of the coils of the ileum there were several small tumor nodules which were located on the peritoneal surface and appeared to infiltrate the wall. The right pleural cavity was much bound down by adhesions around the upper lobe. The lung seemed to be of normal consistency except at the upper part of the lower lobe where a slight increase in resistance was noted. There were also a few small shotty nodules on the surface of the lung near the apex. The upper lobe of the left lung was extremely bound down in its mediastinal surface. There were also a few tags holding the lower lobe to the diaphragm. A small piece of lung removed for microscopic examination showed extensive areas of bronchopneumonia. A section of a small portion of the right lung taken near its base appeared somewhat edematous, except for an area of atelectasis at the extreme base. To the sense of touch the



heart seemed normal, except that there appeared to be a small fibrous nodule in the groove between the two anterior aortic cusps. None of the valves seemed narrowed. No calcified areas were noted in the ascending and transverse aorta.

The liver appeared normal except for a few small, fibrous scars. It weighed 1360 grams. On section the centers of the lobules were deep red in color, while the periphery was a bright yellow, indicating a moderately advanced stage of chronic passive congestion. There were two small, yellowish-white, definitely circumscribed areas.

The spleen weighed 110 grams. The capsule was slate-gray in color, but wrinkled slightly on manipulation. The tissue was quite tough. There appeared to be a moderate increase in connective tissue. The Malpighian bodies were small but numerous.

The left kidney weighed 75 grams. It was small and soft. The capsule stripped with great difficulty, leaving a surface which was coarsely nodular and also finely granular. Raised pale areas alternated with dark red depressed zones. On section the kidney was seen to be markedly contracted. The glomeruli were not visible. Striations were fairly straight but not prominent. The cortex measured 2 cm. on an average.

The right kidney weighed 120 grams, larger than the left, but evidently also a contracted kidney. The raised pale areas were more prominent than in the other kidney. The depressed red zones were confined to comparatively narrow scars. The thickness of the raised portions were only 6 mm. A small medullary cyst was seen in one of the papillæ.

The stomach and duodenum appeared normal. The intestines were very much distended and somewhat inflamed. The Peyer's patches appeared swollen and in places ulcerated. The large intestine showed a dark red color indicative of chronic inflammation.

The appendix was dilated and contained a large amount of feces.

The conformation of the pelvic organs was entirely obliterated by adhesions which formed one large solid mass, embracing the bladder, genitalia and rectum. The peritoneum covering these organs was white, firm and thick. On removing the mass in the pelvis, the bladder was found to be of normal size and contained a moderate amount of turbid straw-colored urine. The mucosa varied from a pink to a dark dirty color near the trigonum where it appeared to be covered with a slight amount of exudate. It was quite evident that an acute cystitis was present. The vagina was smooth and short and ended in a small cauliflower mass which represented the former position of the external os. A sagittal section of the uterus failed to demonstrate any cavity. The uterine wall was quite hard but contained a large quantity of muscle. Upon pressure a few drops of necrotic material could be squeezed from the cut surface. The rectum was quite difficult to open owing to the tortuosity of its lumen and the extreme constriction which occurred near its union with the sigmoid. At this point the tumor had so invaded the wall that it was impossible to pass anything but a probe through its lumen. Incorporated in the pelvic mass were many cysts of a simple

serous variety, some of which were small, but several reached a diameter of 5 cm.

*Microscopical Examination.*—The muscle fibers of the myocardium appeared moderately hypertrophied. There was no excess pigment present in the cells.

Two or three sections of the lungs showed marked edema. There was no evident thickening of the pleura. There was a very diffuse infiltration with small areas of tumor cells. These appeared principally in lymphatic spaces, although here and there they occurred in blood-vessels, and in some cases were seen proliferating actively into the lung tissue. Most of the nodules were simply cords of epithelial cells, but a few of the older lesions had a well-developed stroma.

The liver cells contained dark-brown stippled pigment. The peripheries of the lobules contained much fat.

The pulp of the spleen was flooded with red cells. The Malpighian bodies were large and fairly well outlined.

The kidneys were, on the whole, in very good condition and were no doubt competent during life. Here and there, however, were areas in which Bowman's capsules were slightly thickened and in which the glomeruli were shrunken and in some cases hyalinized. The destruction of tubules in these areas was markedly slight. The cells of the acini were small; the islands of Langerhans were of moderate size and number.

The lymphatic tissue in the submucosa of the duodenum was very abundant, suggesting that the section had passed through a lymphatic nodule.

The section of the ileum passed through the metastasis mentioned in the gross. The tumor cells were located largely in the muscular and serous coats, but were also present in the submucosa. The metastasis was characterized by great thickening of the above-mentioned coats, and by the appearance of large amounts of connective-tissue stroma in which the tumor tissue proper was somewhat scarce.

The uterus on section through the myometrium was found diffusely infiltrated with tumor tissue. Many tumor cells were of a large irregular epithelial character. Many areas contained pearls of keratinization. It was distinctly an invasive tumor. The nodules of the tumor had pushed their way between the muscle cells. The tumor was a typical epithelioma. There were areas of necrosis of uterine tissue with large attempt at fibrous replacement. Some of the larger tumor nodules also showed central necrosis. At least one area showed hemorrhage into the tumor. The pelvic tissues about the tumor were also infiltrated with tumor. Included in this section was the wall of a cavity which was thought to be one of the peritoneal cysts. It was quite thick and its inner portion was hyaline. No epithelium was present but the inner margin of the wall was somewhat ragged as though denuded of its true lining membrane.

The mucous membrane of the rectum showed advanced postmortem changes. The section passed through a portion of the constricting band of tumor. The character of the neoplasm was similar to

that seen in the uterus. It occupied the wall of the rectum down to the submucosa and also surrounding it.

The mucosa of the bladder had been partially cast off. The innermost layer showed extensive hemorrhage into the mucosa and submucosa. There was little leukocytic reaction present. The vessels were dilated and filled with blood. The muscular wall was normal.

The anatomical diagnosis of this case was carcinoma of the cervix uteri, causing obstruction of the rectum, metastases to the peritoneum and lungs, acute cystitis, and multiple cysts of the peritoneum.

DR. HOLDEN.—“In the light of what you know to-day about radium and the x-ray, how would you treat such a case?”

DR. CORSCADEN.—“I would employ radium. One of my cases is now living and going about doing her own work two years after the first Percy operation, eighteen months after the second Percy, and a year after radium was first applied, a poor showing for the Percy and a fine result for the radium. The upper part of the vagina is filled with scar tissue.

DR. FREDERICK C. HOLDEN said: “I worked with Dr. Byrne and am sorry so few men do the Byrne operation. I wish every one knew about this operation and how to do it for I think it has a field and should be used. The only advantage that the Percy operation has over the Byrne operation is that Percy was fortunate in having lived at a later time when surgical technic was better developed. In Dr. Byrne’s time nearly every case operated on had a peritonitis and died. With the advances in surgery if Dr. Byrne had had a Percy apparatus, his results would have compared favorably with those of Dr. Percy. Dr. Byrne charged his cautery with current from wet batteries. The presence of carcinoma was not demonstrated microscopically in his cases but there is no question that clinically they were cases of carcinoma, and he cured them. In these cases he used to castrate and tie both iliac arteries, and personally I believe his good results depended largely upon that procedure.

“Whether one is in favor of the Percy procedure or not seems to depend largely upon his experience in operating for carcinoma; if he is a skilful operator with large experience he gets better results by operating and favors operative treatment. The trouble is that most men do not get a sufficient number of cases to enable them to get a large enough experience to make them feel confident of their operative results. The Byrne operation was not applicable to carcinoma of the fundus; here only a hysterectomy was effective. In the Kelly clinic the cases treated with the cautery were followed in numerous instances by superficial burns and burns of the stomach mucosa.

“It is claimed that cancer cells are sterilized by a much lower degree of heat than normal tissue cells, but it seems from the results that we see that normal tissue is also affected. Another point is that Percy has never given us his statistics. My feeling is very strong that cancer cases present a problem that is so extremely serious that every investigator should be perfectly honest in regard to his work and not lead us to try procedures in which the results are very questionable. Personally, I do not believe that the Percy method gives results that



are comparable to those obtained by the x-ray and radium followed by the Wertheim operation.

DR. HERMANN GRAD said: "I have had little experience with the Percy method of cauterization for cancer. Though my experience is somewhat limited, I have had two or three cases with fair results, but after all the Percy method is purely a palliative measure for extensive carcinoma of the cervix. If one wants to clean up a carcinoma prior to treatment with x-ray or radium it may have a field. In some inoperable cases if the cauterization can do even as much as it did in the case reported it may have a place in surgery, this patient was improved and lived for eighteen months. From the specimen it would seem that a very extensive piece of work was done.

"I only saw Dr. Byrne do one operation in which he demonstrated his procedure in carcinoma of the cervix; he called the method the 'dry roasting.'

"I saw one of the results of the Percy operation recently and it brings out a certain point. This patient had a history of metrorrhagia only four weeks; she claimed that she was absolutely well until this time. From such experiences as this it seems that we have been too hard on the general practitioner, in blaming him for not bringing these cases to operation earlier. He does not see them earlier because they do not have any symptoms and do not present themselves. This woman had absolutely no symptoms and yet the vagina was simply a mass of cancer tissue, it was difficult to say whether she was a case for a Wertheim operation. However, I did an exploratory incision and found that she was beyond all surgical aid. I then did a thorough cauterization which was followed by no reaction and the patient was now very comfortable and doing nicely.

"On the other hand, I had a case about six months ago in which a cauterization was done and everything seemed to be progressing favorably, when on the seventeenth day the woman had a very violent hemorrhage and died. This hemorrhage was the result of a slough into the iliac vein.

DR. CORSCADEN, in closing.—"In presenting this specimen I did not intend to advocate the Percy method but only to maintain one point and that is, that in forming an estimate as to the value of such a procedure it is better to get the material on the table and then anybody who wants to study it can do so and can draw his conclusions. It may be that Percy is right in following Vidal in holding that low grades of heat retard the growth of epithelioma more than they do normal tissues. The laboratory findings in this respect are absolutely contradictory. Some say that normal tissue cells are destroyed before the carcinoma cells are destroyed and others say just the opposite. I have 100 mgs. of radium and I prefer to use it rather than the Percy method. It seems to me that if a woman has at most only a year or two to live, there is no use in making her miserable for three or four weeks. With the Percy method there is a certain mortality also to be taken into consideration, while with the radium treatment there is no mortality. However, there may be cases in which it is advisable to use the Percy instrument before applying the



radium. If one plunges the cautery into the uterus and burns out the carcinoma one may save the patient from a few metastases. In the cavity thus made is inserted the radium. I think that is about the place to which the Percy cautery has been relegated. With the use of radium it is only necessary to keep the patient in the hospital for a few days.

DR. A. J. RONGY discussed

PELVIC FLOOR REPAIR DURING THE PUERPERIUM; WITH REPORT OF CASES.

"My reason for bringing this subject before you is not so much to prove anything as to stimulate discussion on a subject that has been entirely neglected in our work. A primary repair of the pelvic floor is a failure in a large percentage of cases, many of these patients return later to the gynecologist no matter how carefully the repair has been done. In a woman who has had three or four children and in whom the pelvic floor has become relaxed, we are confronted with the problem of doing a primary operation or else working out some other method whereby we can do the repair when a woman is able to remain in a hospital for only a short length of time. It seems that some plan should be worked out whereby something can be done for the poorer class of patients who are unable to leave their home duties to come back for a secondary operation. Recently I have had a number of cases that were suitable for an intermediary repair. Six of these I can report in detail. Four of them have had both rectocele and cystocele. They were all operated on the seventh or eighth day and all made good recoveries. There have been no recurrences of the condition for which the operations were performed. The technic of the operation was practically the same as that followed in doing a secondary repair of the perineum or cervix. One can employ the operative procedure to which he is accustomed and which he can perform most successfully. The hemorrhage at seven or eight days postpartum is likely to be more profuse than at other times and one must be careful lest he strike a large vein, when the bleeding must be controlled quickly. The tissues should be handled carefully at this time as they are more friable at five, six, or seven days postpartum. The only danger is that of embolism if one opens up a large vessel, yet Hirst in fifteen years' work has never encountered an embolism from this cause. The union in these cases is, as a rule, good.

"It seems to me that if we would take up the subject of the repair of the pelvic floor at seven or eight days postpartum for the women who are unable to come back for secondary operation it would be a great advantage. Instead of neglecting to have the needed repairs made to the pelvic floor as they now do until after they have had a number of children and finally get a severe form of proclidentia, it would be better for such women if we employed the intermediary operation. It would be a good thing if we could work up 300 or 400 cases so that we might have some criteria to guide us. The repair of the pelvic

floor is primarily an obstetrical procedure and should remain in the hands of the obstetrician.

DR. BRODHEAD said: "My experience in work of this kind has been very limited. I have had two or three cases in which I have done the repair seven or eight days after labor. These patients all did well and I am inclined to believe with Dr. Rongy that there is a place in charitable institutions and among women who cannot leave their homes at any other time for reparative operations of this kind. If, however, patients can come back later I doubt very much the advisability of operating just after labor in comparison with doing these operations three or four months later. While the few cases in which I have done repair work just after labor have done well, I feel that we must recognize that there is a certain amount of danger attendant upon operations at this time and that the only thing to do is to tell the patient that there is a certain amount of danger and let her decide for herself.

DR. HARRY ARANOW said: "I had a case sent to me a few months ago, in which there was trouble from a bilateral tear of the cervix which she wished to have repaired after labor. The woman was delivered of a premature baby in another hospital. I told her I could not do the operation at that time while she was in the hospital, that she would have to come back later. But the patient wished the operation done and having heard of what Dr. Rongy was doing, I finally did a modified Sturmdorf operation on the sixth day postpartum. I did the operation very gently, not exerting any traction of the uterus, so as not to interfere with the clots in the uterine wall, and the result was as good as in any case of mine that I know of. The woman left the hospital in good condition in two weeks. Since that time I have had another case in which I did a low amputation of the cervix, a perineorrhaphy and an operation for cystocele during the puerperium and the results were as good as though the operations had been done under other conditions. In operating a short time after labor one is apt to find that the bleeding is a little more profuse than at other times but this does not seem to matter much.

DR. KOSMAK said: "I have given this subject a great deal of attention and I cannot bring myself to believe in the contention that the results of a primary perineorrhaphy are generally bad. As soon as we give more attention to the after care of primary perineorrhaphy we may expect to get better results.

"If, after a primary perineorrhaphy, you examine a case in which the legs have been bound close together you will find when they are separated that the lochia which has been dammed back into the vagina will flood the suture line on the perineum. Separating the legs does not put any strain on the sutures in the perineum. When the lochia is dammed back in the vagina it decomposes and is more likely to infect the perineal wound. To avoid this danger it is my practice to keep the legs separated after doing a perineorrhaphy following labor, as in this way the wound can be kept cleaner. If the patient lies on her side a pillow is placed between her knees, so that there is no retention of the discharges.

"Another point is that we do not allow the nurses to put a vulvar pad on these patients. The average pad, pinned from front to back, rubs against the wound. A pressure pad is unnecessary. Where there is a free discharge a pad is simply placed under the patient. In the outdoor service of the Lying-In where women are cared for in the tenements, who are careless and do not keep the pads in place, we find that the perineal wounds remain fairly clean and the patients do well.

"I have no objection to a low vaginal douche and often direct the nurse to give very carefully a saline douche forty-eight hours after a perineorrhaphy has been performed.

"Very often frequent bowel movements interfere with healing of the perineum and therefore low enemas carefully given are to be preferred to the administration of cathartics.

DR. HOLDEN said: "Dr. Stewart of the Brooklyn Maternity Hospital had a large series of cases in which he was very careful in following up and observing the results in those operated on immediately after labor and later. Dr. Hussey reported a series done along the same line. Personally I am very much in favor of a primary perineotomy, and would like to have the opportunity of demonstrating the difference in the women in whom a primary perineotomy has been done and those in whom it has not been done. This is a little digression from our subject which I hope you will bear with. We have all had the experience of looking for tears at the time or just after labor and have not been able to find them and then the women have come back five or six weeks later and we have found large tears. After the perineum has been subjected to long-continued pressure and stretching, it may never regain its normal condition and a primary perineotomy avoids this. Then I believe that it saves many babies by avoiding the long perineal stage of labor. In cutting we do not continue through the sphincter but merely go as far as the anterior surface of the sphincter. In several cases I have had to go through the sphincter but I sewed it up and the surgical results were beautiful. I encourage my internes to do a perineotomy now and to avoid these operations for the restoration of the pelvic floor. Of course, Dr. Rongy has referred more particularly to the repair of rectocele and cystocele in multiparous women. I do not know that I approve so much of the operation on the cervix as on the perineum. I think these operations are obstetrical and never gynecological until at a later period.

"Of course, in doing a perineotomy we should be careful about hemostasis. If we cut a vessel we should ligate it very quickly. The advisability of doing a perineotomy depends upon the kind of a case we are dealing with, but I feel that it is to be regretted that in suitable cases obstetricians do not take the trouble to employ perineotomy more frequently than they do.

DR. BRODHEAD.—"I would like to ask Dr. Holden whether he considers it an advantage to do a perineotomy in the median line rather than bilaterally.

DR. HOLDEN.—"I have done a lot of bilateral perineotomies and in



doing a bilateral perineotomy the tissues cut through are not the same and we do not get as good results as when the incision is made in the median line. We may get as much room by doing a bilateral perineotomy but the results are not as satisfactory. I cut through the median line either with the shears or with a knife and after the placenta is delivered we give the patient pituitrin, pack the vagina and sew up the incision. The results are so good that is simply a hair line in the median line of the perineum and one would not know that the woman had ever had a baby. I think that if you would try a few cases you would be surprised at the results.

DR. BRODHEAD.—“Does doing a perineotomy as you describe make any difference as regards a future cystocele?”

DR. HOLDEN.—“No. It is done after the head is on the pelvic floor I never use a vulvar pad on any woman who has had a repair of the pelvic floor following delivery. I place these patients in the Fowler position and insist upon their lying on the abdomen for five minutes every two hours; this gets rid of any accumulation of lochia.

DR. HARRY ARANOW reported a case of

CESAREAN SECTION FOR PREGNANCY COMPLICATED WITH CARDIAC DECOMPENSATION.

The obstetrical management of this case has been severely criticised by some medical internists and I am therefore taking the liberty of reporting the case to you for your discussion.

The patient was twenty-six years of age, the wife of a physician, a Russian, para-i. She was referred to me for obstetrical care on October 10, 1917, in the thirtieth week of her pregnancy. The family history showed that her father died of cancer, her mother of heart disease. The patient had had scarlet fever, diphtheria, acute articular rheumatism and one attack of heart disease with failure of compensation one year ago.

Menstruation began at the age of seventeen, was regular, every twenty-five days, lasting three days and was normal in amount and not painful. Her last menstruation was March 17, 1917. The estimated date of conception was the beginning of April. The date of quickening was not known.

The patient's health during pregnancy had been poor. She had considerable nausea during the first two months. No uterine bleeding had occurred and no uterine contractions were noticed. There was some cough with bloody expectoration at times. Urination was frequent during the day and two or three times during the nights.

*External Examination.*—The patient was markedly cyanotic and dyspneic. Her lips and finger-tips were blue. The dyspnea was so marked that the patient was unable to assume the dorsal position for examination. There was visible pulsation of the cervical veins. The teeth were in fair condition, the thyroid normal. The breasts had a good lacteal capacity; the nipples being large and prominent and the secretion ample.

Examination of the lungs shows respiration rapid and shallow.



There were moist râles at the base of both lungs. The heart beat was not visible at the apex, it was diffuse, the action tumultuous; no thrills were palpable. Percussion showed the heart enlarged to about 5 inches to the left of the middle line and also to the right of the sternum. Auscultation revealed a double murmur, heard at the apex and transmitted to the left axilla and up toward the aorta. The apex beat was not distinct. The heart sounds had a gallop rhythm. The second pulmonic sound was accentuated. The pulse was 78 and the blood pressure 97-58.

Examination of the abdomen showed it enlarged to about the size of an eight months pregnancy. There was some pulsation and tenderness in the epigastrium. The uterus was spherical, 19 cm. above the symphysis. The fetus moved actively, was small in size and the presentation was cephalic. The position was L. O. A., the station low. The heart action was distinct, being L. L. Q. 154. The extremities were markedly edematous.

The pelvic measurements were interspinal 22 cm., intercrystal 26 cm., external conjugate 19 cm. right and left diagonals 22 cm. The outlet measurement, transverse was 12 cm.

*Internal Examination.*—The vagina was roomy; portia, short; os, closed; membranes intact. The diameter was ample. The conjugate sera was not taken.

Examination of the urine showed passive congestion of the kidneys.

The diagnosis was pregnancy in the eighth month, mitral stenosis, mitral regurgitation, probable myocarditis and failure of compensation.

*Treatment.*—Several days later I saw this case again in consultation. We felt that at that time we would not be justified in adding the burden of a labor or a Cesarean section to an already overburdened heart. Accordingly we had the patient admitted to the Lebanon Hospital for treatment by absolute rest and medication, under which the patient improved considerably. The percussion area of the heart became smaller and the heart action stronger and more regular. The cyanosis and edema practically disappeared and the lungs cleared. The dyspnea, however, remained about the same. A consultation was then held with Dr. Rongy and several members of the medical division as to the best methods in the further care of the patient. Dr. Rongy agreed with me that a Cesarean section would be the safest method of delivery in this case. The opinion of the medical internists, however, varied considerably.

One man felt that we had no right to further endanger the mother's life by waiting for a viable child. Another internist suggested waiting for a week or two, giving the patient a thorough course of digitalis medication, and then inducing abortion. A third internist gave it as his opinion that we could wait as long as necessary and allow the woman to have an easy labor. We waited until November 20, 1917, the beginning of the thirty-sixth week of pregnancy. The patient was given  $\frac{1}{4}$  of a grain of morphine and  $\frac{1}{200}$  of a grain of scopolamine hypodermically at 8.30 A. M. and at 9.00 A. M.,

under light anesthesia, we performed a classical Cesarean section and delivered the woman of a live  $5\frac{1}{2}$  pound baby girl. The patient stood the operation well. We quickly tied and resected both tubes and closed the abdominal wall. On top of the dressing and parallel to the incision we packed two sand-bags of about 5 pounds each. The mother was returned to bed in as good condition as she was before the operation. Both mother and baby did well; the mother's condition improved so rapidly that she went home comfortably on the fourteenth day postpartum.

This case seems to me to bring out the following interesting points for discussion. Given a case such as the one described, (a) are we justified in waiting for a viable child, or is it perhaps our duty to wait for a viable child?, (b) having reached the viable period what is the best obstetrical procedure?, (c) are we justified in sterilizing our patient, or is it perhaps our duty to urge sterilization on the patient?

Our having sterilized this woman might be strongly criticised. The question whether we had a right to sterilize the patient came up and I read the opinions of the best authorities on the subject, the consensus of which seemed to be that in a case of mitral stenosis in which the heart had failed once, it would continue failing. It seemed to me that in view of this fact it was our duty to sterilize this patient, but several internists felt that it was a serious matter and questioned whether we were justified in doing it.

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## TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

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*Meeting of January 8, 1918.*

*The President, DR. HIRAM VINEBERG, in the Chair.*

DR. JOHN O. POLAK presented two specimens of

### UTERINE FIBROID COMPLICATED BY PREGNANCY.

The two specimens which are presented for discussion will illustrate first, fibroids complicated by pregnancy, and second, pregnancy and labor complicated by fibroids.

The history of the case from which the first specimen was removed is briefly as follows: Mrs. J. S., forty-one years, married twenty-one years, four children, entered my service at the Long Island College Hospital, complaining of pelvic pain, painful and difficult defecation, and metrorrhagia. Her family history was negative. Previous personal history: about nine years ago she had pulmonary tuberculosis, with two years of sanitarium treatment. She was discharged with a healed lesion in the upper lobe of her left lung. Her last pregnancy was followed by a mild sepsis, at which time she was in bed for six weeks. Her last regular menstruation was six weeks ago.

Her present trouble began after the birth of her last child, eleven years ago, and since this time she has complained of general pelvic pain, with pre and co-menstrual pain and difficulty in defecating. Cathartics had little or no effect. The bowels were moved best with enemas. Varicosities and edema appeared in her left leg and thigh, and for the last three weeks there has been continuous vaginal bleeding.

Examination revealed a mitral murmur at the apex, not transmitted, small fine rales over the upper lobe of the left lung and bronchovesicular breathing with distinct dullness on percussion over the anterior and posterior surface of the left upper lobe, extending in front to the fourth interspace and posteriorly to the spine of the scapula. On pelvic examination there was a relaxed introitus with separation of the levators. The cervix was displaced upward, forward and to the right to a marked degree, by a hard incarcerated and immovable tumor, filling the entire pelvic basin. The cervix was actually above the symphysis. An abdominal mass, the size of a six weeks' pregnancy, continuous with the cervix, could be made out in the right iliac fossa, but no characteristic signs of pregnancy were obtainable.

*Diagnosis.*—Incarcerated and adherent fibroid, displacing the uterus upward. Exploratory laparotomy under morphine and scopolamin, with gas, revealed a pregnant uterus, forced out of the pelvis by the tumor described above. A diagnosis of pregnancy was not made prior to operation. A panhysterectomy was done, although enucleation of the tumor, leaving the pregnant uterus, would have been possible. Hysterectomy was done because of the active pulmonary condition. The recovery was uneventful.

The second case, a woman forty-one, married one year, pregnant for first time, came to me in June, 1917. She was pregnant four months yet presented an abdominal tumor which reached nearly to the ensiform. This tumor was smooth and hard, came from the left posterior fundal wall of the uterus, was very sensitive, and had grown rapidly. The uterus was palpated to the right and in front of the tumor. It was studded with smaller nodules. Vaginal examination revealed the cervix elongated and passing between two tumors firmly incarcerated in the pelvis. The growths, especially the large fundal tumor, were causing cardiac and respiratory distress. She was operated on June 26, 1917. The fundal and anterior cervical tumors were removed by myomectomy. This I thought, would allow descent of the presenting part and remove the obstruction to labor. Her recovery was afebrile, but was complicated by a partial intestinal obstruction which was relieved by starvation, lavage and enemata. On November 26th she entered the College Hospital, in labor. The head was in the pelvis, almost at the spines, the cervix three centimeters dilated but not wholly effaced. Her labor pains were violent and morphia was used freely. The fetal parts could be easily palpated over the left fundus through the thinned out myomectomy scar and the abdominal mass. After watching the progress of labor for six hours there was no increase in the cervical dilatation



although the thinness of the fundus became more and more apparent. I delivered her by Cesarean section and then removed the uterus. The specimen even now, shows the thinned out area over the left fundus. Her recovery has been uneventful.

The first case shows how easy it is to miss a pregnancy in the presence of a fibroid tumor. It is only by obtaining an accurate history and by a correct interpretation of this history that the diagnosis can be made.

The second case illustrates the well-known fact that myomectomy, even with extensive destruction of uterine muscle, may go to term, but should be constantly watched, and by all means delivered in a hospital by a competent obstetric surgeon.

#### DISCUSSION.

DR. A. B. DAVIS.—Both of these cases are particularly interesting, but the first case interests me the more because a number of years ago I had a case which was very similar to it, only the pregnancy was the salient point. It was in a young woman, a primipara, a very nervous individual, early in pregnancy, and I failed to make a vaginal examination, as I thought it was unnecessary in the early months. She came into my office, about three or four months pregnant, with violent pain, and I thought I was dealing with an ectopic. I did not make an examination in the office, but sent her directly to the hospital, where, if anything happened, I could take care of her, and found a condition very similar to the one which Dr. Polak operated for. She was a perfectly healthy woman. On the following day I did a myomectomy without interrupting the pregnancy, and she went on to full term.

In the second case the fact of the stretching out of the fundus interests me. In doing Cesarean sections I often try to keep well below the fundus and in nine cases out of ten when the uterus is empty and we come to sew it up, we find that the scar goes to the top of the fundus and almost always there is a stretching-out above the level of the horns of the uterus.

DR. J. R. GOFFE.—I am interested in the fate of the second patient, but did not learn what became of her.

DR. JOHN O. POLAK.—I shall answer Dr. Goffe's question. The woman with the tubercular condition has recovered and is about to leave the hospital. Notwithstanding the fact, that no ether was used and she was operated upon under morphin-scopolamin with a little gas and oxygen, she had a most violent exacerbation of her tubercular process, which lasted for a week or ten days. We gave her open-air treatment and she made a good recovery.

I desire to emphasize the point with regard to the missing the diagnosis of pregnancy in the second case. I missed it absolutely because I did not pay sufficient attention to the history. The diagnosis of a pregnant state was written all over the history, the six weeks' amenorrhea and metrorrhagia, and it was one of my careless moments of ordering a patient to be operated on and paying attention to another lesion, with the result that in so doing I missed



the pregnancy. I think that in most of these cases in which we miss the diagnosis, if we review the history, we will find it is our fault absolutely and the error is due to the lack of interpretation of the signs found.

DR. HERMANN GRAD reported a case of

DOUBLE PAPILLARY CARCINOMA OF THE OVARIES UNITED BY  
INFLAMMATORY ADHESIONS.

Miss M. C., aged forty-nine, was admitted to the Woman's Hospital complaining of a metrorrhagia of three months' duration and pain in the lower part of the abdomen. Patient had never been married. Her family history is entirely negative. Menstruation began at the age of fifteen, was always regular, moderate in amount, with no pain, lasting from four to five days. The time of her last period not definitely known as she has been flowing more or less for three months. She had been suffering with pain in the abdomen for several months, which is a great deal worse at night. She has lost a considerable weight although conscious of an enlargement of the abdomen for a month or so.

The heart and lungs proved negative. The abdomen was irregularly enlarged to the size of a six or seven months' pregnancy. On the right side on the level with McBurney's point was a protrusion of the size of a fist. The mass was tender to the touch and hard in consistency. There was dulness on percussion over the entire tumor, which did not change with the position of the patient. Bimanual examination was difficult on account of the presence of a resisting hymen. It was obvious that there was a tumor in the true pelvis of a soft consistency. The cervix of the uterus was raised up and firmly pressed against the os pubis. The fundus of the uterus could not be located. A diagnosis of ovarian cyst and fibroid of the uterus was made and the possibility of malignancy considered.

*Operation.*—The abdomen was opened in the midline below the umbilicus, but on account of the size of the tumor, the incision was enlarged and carried to the left and 1 inch above the umbilicus. On opening the peritoneal cavity a large amount of serous fluid escaped. The omentum was found adherent to the tumor. Several coils of small intestines were also adherent to the neoplasm. At one point the wall of the cyst was very thin, and a rupture occurred at this point during the manipulation. A large amount of fluid escaped into the peritoneal cavity. The papillary type of the tumor was now recognized and it was deemed best to clear the pelvis of its contents, attacking the uterus first. Accordingly the infundibulopelvic ligament was cut between clamps and the bleeding points tied. The cervix was now divided and the broad ligament on the opposite side clamped off from below. In this manner the uterus with both ovarian neoplasms was removed in one mass as is shown in the specimen. It was then found that both tumors have fused by an inflammatory adhesion. There were no other peritoneal implantations.

*Diagnosis.*—Papillary and glandular cystic carcinoma of ovary.

The pathological report was as follows:—

*Macroscopical.*—Both tubes are slightly thickened. Both ovaries are changed into large cysts which were collapsed when received. One cyst shows extensive, very fibrous, yellowish papillations on the inner surface, the other ovarian cyst which is slightly smaller, fuses with the first-named cyst and shows a fairly smooth inner surface. A solid, very fibrous tumor mass of 8 cm. in diameter was received separately, the uterus measures 7 by 4 by 3 cm. and shows a small submucous myoma. Several sections from papillary cyst and from uterus.

*Microscopical.*—The section shows a mucosa of normal type. The tube has densely infiltrated, plump placæ and edematous muscularis. Two section from the cysts show a variety of epithelial structures penetrating and solid masses of cells with marked optical unrest are not uncommon. Only few portions of one section show papillations.

DR. EMIL RIES, of Chicago, by invitation, read a paper, illustrated by moving picture films, entitled

A NEW OPERATION FOR UTERINE PROLAPSE.\*

DISCUSSION.

DR. J. R. GOFFE.—In Dr. Ries' opening remarks he was rather inclined, I think, to put too much responsibility on Providence and our Creator for the weaknesses that woman suffers from in our generation and from the disasters attending her in confinement. I am rather inclined to come to the defense of the Creator and maintain that these conditions are rather due to the errors of our civilization, errors of early training, lack of proper development and the unfortunate conditions under which women live.

The operation that Dr. Ries has described is, as he says, restricted to women that have passed the child-bearing period and elderly women whose tissues are all relaxed. He says he tells his students that he cannot be expected to restore these parts as well as Nature has done it, and he does not expect them to functionate quite as well. I think he might be a little more positive in his statements to his students. Certainly I tell mine that I restore the woman to about as natural a condition as before the accident and expect the parts to functionate quite as well.

In discussing the operation Dr. Ries laid down one particular principle that a surgeon should endeavor to follow in all plastic work, and that is to restore the anatomy as far as we possibly can to what Nature had intended, and also to restore the functions. The condition that he has described, where there is a separation of the peritoneum from the bottom of Douglas' pouch, is new to me. I recognize it now as being a condition that has been the cause of the return of the rectocele. I have no doubt my experience in this con-

\* For original article, see page 758.

dition that sometimes confronts us corresponds with that of many others and discourages us in the results we expect to obtain. I feel confident, however, that this is easily prevented by the method Dr. Ries has described, or by something of that character.

Now the slipping down of the wall of the bladder is a condition that I early recognized in my work on cystocele. Dr. Dickinson described it fully years ago. I cannot tell how long ago or how it compares with the date of the German operator mentioned, but Dr. Dickinson called it a slipping down of the various planes of tissue, a slow glacial slide. That is a rather decided and somewhat picturesque illustration but it is undoubtedly present in all these cases.

In the operation that I have had the honor to present to the profession, which I have worked out after many laborious years (indeed I think I have worked upon this subject every year in this century up to date), that was a condition I early discovered. I relieve it, however, in a different way from Dr. Ries and I believe in a much more natural and permanent way. I take advantage of the very strong fascia in the trigone and use that to support the bladder instead of depending simply on the flabby bladder wall. The trigone of the bladder, which is easily recognized as a strong triangular fascia, I fasten by three stitches to the anterior wall of the uterus. This is most effectual in carrying the bladder up in the pelvis, raising it to its normal position and effectually retaining it there. The operation that Dr. Ries has presented is really a double operation. It involves not only very extensive vaginal work but it necessitates as well a laparotomy and considerable work inside of the peritoneal cavity. It is applicable only to women advanced in years and the question of shock must be taken into careful consideration. Opening the abdominal cavity is adding an additional shock and if we can avoid that by confining our operation to the vaginal work it is a very great advance. All the procedures necessary to relieve permanently the condition under discussion can be done through the vagina and, therefore, should be done exclusively that way.

The operation that I devised (excuse me for speaking of it in this connection) is one that is applicable not only to these advanced cases of cystocele or procidentia and rectocele, but the same principles exactly and the same steps of the operation are applicable to all cases of procidentia, cystocele and rectocele, except in extreme cases and in patients past the menopause. In such cases the uterus is removed and the broad ligaments stitched together to take its place as supporting tissue. I use it in cases which are still in the child-bearing period and have a long list of patients who have become pregnant after the operation and borne children and have come out of the ordeal without the least injury, either to the cervix or to the peritoneum.

In 1912 I published a review of my cases. After I had brought the procedure to a reasonable degree of perfection I wrote to some 45 different patients to come to my office. Those that could not come I asked to report by mail. Of those forty-five, twenty-nine



reported. Of these twenty-nine, twenty-four came to the office for examination. They were of all ages from the child-bearing period up to seventy-five years. I reported no cases that had not been subjected to the test for at least two years. Two of them had become pregnant and borne children and both came to the office for examination. I found them in perfect condition. Nothing had given way, everything had stood the test, and I concluded that I had come as near in the design of my operation in following Nature's anatomy and thereby securing successful physiologic action as it was possible to do.

DR. G. G. WARD, JR.—I think it is always of great value to see the point of view that others have in tackling this complicated problem of prolapse. Many of us have different ways of approaching the same problem and often with similar degrees of success. We all have our failures. It seems to me that in studying a case of prolapse of the uterus we must recall to our minds the normal supports of the organ and wherever they are at fault we should try to restore them to the normal condition, as Dr. Goffe has shown us in his operation. I have done Dr. Goffe's operation for prolapse of the bladder and of the uterus a good many times and certainly with satisfaction. It seems to me that what Dr. Ries does in freeing the bladder rather widely from below and then opening the abdomen and attaching the bladder well up on the fundus of the uterus is very similar to what Dr. Goffe does through the vagina. In other words it would seem that Dr. Goffe does from below a very similar procedure to what Dr. Ries does from above.

I was glad to hear Dr. Goffe give Dr. Dickinson credit in calling our attention to his work on the planes of cleavage and I think that perhaps Dr. Ries might be interested in studying Dr. Dickinson's excellent pictures on that subject. Dr. Dickinson has also advocated doing a similar procedure to that which Dr. Ries has spoken of of suturing the bladder to the abdominal parieties. Dr. Ries spoke of the bladder being separated from the symphysis and in some of these cases he sutures it to the peritoneum above the symphysis on the anterior wall of the abdomen. That is a procedure I know Dr. Dickinson has advocated.

One other point which I think is of great interest in the fact that we should study these cases in their entirety, as it were. It is not only a question of a woman having a prolapse but it is also essential that the question of her general tissue tone should be taken into account. An interesting study was made not very long ago by Huggins, of Pittsburgh, on the question of tissue tone in the relation it bore to prolapse, with the result that it was found that many of these cases of prolapse has a general loss of tissue tone, not only in these structures, but in other organs as well and this was particularly shown in the heart muscle. In one or two unfortunate deaths, apparently from an operation of this kind he showed quite clearly that the general loss of tone, not only of the pelvic tissues, but also of the cardiac muscle, had something to do with death in these cases. In a case which has poor tissue tone we can accomplish better re-



sults, I think, if we let the patient rest a long while in bed before the operation is done. I feel that at Bellevue Hospital, where we are fortunate enough to be able to keep patients in bed in the wards for some time before operation (something which is not possible in other hospitals), we have a distinct advantage in these cases of prolapse that are run down, relaxed, and in a poor condition, because they can go to bed and rest and be in a better shape to be operated on than if this were not possible.

I do not use the method that Dr. Ries advocates of fastening the uterus to the abdominal wall, which is a fixation operation as I take it, because I have found that sometimes the cervix came down and looked at me over the perineum later on, due to elongation as the result of traction. I prefer in the case of old women or women past the menopause with marked enervation, to remove the uterus and sew the ligaments together and interpose them underneath the bladder, an operation sometimes known as the Mayo operation. It has, in my hands, been very satisfactory in cases of marked prolapse. I appreciate the criticisms of the interposition operation and yet I feel there are certain cases where it is applicable and satisfactory. In cases which have not reached the menopause and are not markedly prolapsed it is, of course, not desirable to do such a severe operation. In these cases I am very partial to the method of Alexander and also the method of Hertzler and Dudley, in which the broad ligaments are brought in front of the cervix. These so-called cardinal ligaments are the chief support of the uterus and this procedure tends to throw the cervix back toward the hollow of the sacrum. I sometimes combine shortening of the uterosacral and the normal ligaments with the above. Of course, a proper restoration of the pelvic floor is essential in all cases.

DR. JOHN O. POLAK.—I am also very much indebted to Dr. Ries for his presentation for I do not know how to cure prolapse, but there are two or three points that Dr. Ries has brought out which I would like him to clear up for us in closing the discussion.

First of all, in my experience with prolapse, the cystocele and rectocele has usually been associated with an intravaginal hypertrophy of the cervix, consequently it has been a routine for us to amputate the cervix. Secondly, in prolonged labors we all know that the connective-tissue web and its fascia about the cervix sustains the strain, particularly if the patient has a dry labor or is delivered with forceps before complete dilatation of the cervix, the cervix becomes loosened from this web and the cystocele starts at this point. It has always seemed to me that the point which Fitzgibbons brought out, that by amputating the cervix we reestablish this web, is a very valuable one.

Another point that seems to have been disregarded in Dr. Ries' consideration is the part that the uterosacral ligaments play in holding the cervix backward and maintaining the relation of the uterus in the pelvic cavity. This seems to me to be one of the fundamental points in the consideration of the treatment of prolapse. The only point that I have to discuss is to say that this method of carrying the blad-

der over the fundus of the uterus has in my hands, in applying it to the Bell-Büettner operation, been a most satisfactory procedure in keeping up the bladder.

The details of the doctor's operation have been illuminating, particularly the one point he has brought out in regard to why we have recurrences in these cases with low placement of the pouch of Douglas, this one point explaining some of my recurrences and I feel that I have been more than repaid in learning how to distinguish this form of rectocele from the other rectoceles.

DR. JOSEPH BRETTAUER.—The first rectocele pictured on the blackboard is really not a rectocele but an unusually large enterocele and which I was fortunate enough to discover several times. Dr. Moschowitz has devised a plan for the cure of total prolapse of the rectum. That operation consists of obliterating the entire pouch of Douglas by a series of continuous sutures (seroserous sutures), from the bottom of the peritoneal pouch up to the brim of the pelvis. I have used this method in two cases which I now have in mind. I did not resect at the primary operation the prolapsed part of the Douglas pouch, of the peritoneal floor, which was outside of the vagina and which impresses one on the first aspect as a rectocele. I went in from above at once and obliterated the entire Douglas pouch with the assistance of Dr. Moschowitz and got, symptomatically, an absolute cure. A few weeks later I resected the remaining prolapsed part of the vagina and peritoneum without entering the peritoneal cavity. Another case like that was perfectly cured. These cases are rather infrequent.

As to the treatment of total prolapse in cases in older women who have passed the menopause (I think those are the cases mainly under discussion to-night), I have had recurrences but as a rule I have been successful with a less extensive operation and I think one of the reasons why I have been more or less successful was because I have made it a principle not to operate on these cases before the edema of the cervix and vaginal walls has disappeared. I keep these patients in bed from one to three weeks in an elevated, half Trendelenburg position, using care that the cervix does not come out of the vulva again, with the result that in most instances a cervix 3 or 4 inches long has been reduced to nearly normal size. The other principle which I have followed is not to reef the bladder but to obliterate the vesicouterine fold of the peritoneum.

DR. R. M. RAWLS.—The impression I have gained from the descriptions is that Dr. Ries disregards the fascial structures absolutely. He depends entirely as I see it (I may be wrong in this and if I am I hope he will correct me), on attaching the bladder to the uterus or the abdominal wall, or the peritoneum of the culdesac to the uterus, or obliterating it. He further refers to suturing the pubovesical ligament and the fact that he is not able to demonstrate it in all cases. While my experience is not very great in cystocele repair, I have never yet failed to demonstrate to my satisfaction the thick tissue layer between the anterior wall and the bladder. The method is simply not to do any vaginal mucosa dissection, as

Dr. Ries does in the first place, because if you do you will destroy more or less of the tissue which makes up the pubovesical ligaments, or the lateral ligaments of the bladder, which are really the vesical fascia. The doctor referred in this connection to a "lozenge-shaped dissection," and continued, saying: "If the incision is made directly through the vaginal wall down to the musculature of the bladder and the bladder is sutured over, then you will have a distinct fascial plane, even in simple cases of cystocele, which are harder to demonstrate than in the older cases of complete prolapse, because in the latter they are very easily demonstrated. Furthermore, it seems to me this operation really follows out the form of denudation suggested by Raney in 1882, I think it was—the horn-shaped incision for anterior colporrhaphy. Then, further, the hitching up of the fundus of the uterus to the recti muscles is an operation, as I remember, suggested by Philander Harris, so it seems to me that the operation as presented is merely a compilation of other operations as we have had them before."

Referring to the sliding down of the culdesac, posteriorly, the doctor said: "To my mind this sliding down is a rupture in the fascia which allows the peritoneum to come down and prolapse, and if we look for this fascia in doing operations above the levator and depend more upon the superior and inferior fascia of the levator rather than attempting to coapt the muscles, then it seems to me that we will get a better result."

DR. H. N. VINEBERG.—I would like to ask whether Dr. Ries considers it an advantage to make an oval incision rather than a longitudinal one, which is usually done, also whether he sterilizes all the patients on whom this operation is done, and also whether the pregnancy that occurred in one of the cases took place after such a sterilization.

DR. HOWARD C. TAYLOR.—In the treatment of prolapse I have never been able to feel that I could replace the organs and anatomical structures where they were originally and I have never seen any one whom I thought did so. In complete prolapse I do not believe that it can be done and that men who claim to do so deceive themselves. This idea was well illustrated by one of the speakers who spoke of replacing the parts anatomically and of putting the bladder on top of the uterus, which is hardly where it belongs anatomically. Referring to the question of cystocele and the tendency of the parts to "swing forward" in this condition, I think there are three ways to prevent it. First, the one that I have never used, which has been so well described by Dr. Ries and which I shall try in the future, namely, obliterating the culdesac. The second is the one of which Dr. Polak has spoken. The cervix is amputated and the broad ligaments are sutured across in front of the uterus. The third is to do the suspension high enough to hold the cervix away from the vulva. There is no reason why a suspension should not be done as high as midway between the pubes and the umbilicus. Assuming that the woman is to have no more children I know of no more secure way than to do a ventrofixation as stated by Dr. Ries. I have not



displaced the bladder high on the uterus through the abdominal incision as he described it but I thoroughly approve of it in some cases and undoubtedly shall do it in the future.

There is only one other point I would like to touch upon and that is with regard to the interposition operation. I think that is an unfortunate name for an operation which accomplishes so much. I believe it should be spoken of as a displacement or replacement of the bladder. If you have a marked cystocele with a small uterus there is no real trouble in doing an interposition operation. If you have a moderate cystocele with a large uterus an interposition cannot be done without diminishing the size of the uterus. The bladder can be displaced higher up on the uterus and the vaginal wall sutured to the anterior wall of the uterus. The uterus is not really interposed between the bladder and vaginal wall and it is not an "interposition operation."

DR. EMIL RIES (closing).—When a man from one of your Western suburbs comes to New York to show you something new about operations he expects to be told that what is new in his operation is not good and what is good is not new. I was not quite told that, so I should be pretty well satisfied.

Some of the statements made by the various speakers I cannot answer. One of them said he operated on two cases which afterward became pregnant and at confinement had neither laceration of the cervix nor of the perineum. I cannot answer that. I have never seen a confinement without laceration of the cervix.

Dr. Goffe mentioned a very excellent operation of his that he has proposed, with which I am acquainted, but I could not possibly mention all the methods of operating that have been used in the treatment of prolapse, nor could I mention every author who has contributed to our knowledge of the anatomy and symptomatology and operative technic in prolapse. It is much easier to write a book on prolapse than to give a short paper. Dr. Goffe's operation, I think, is a very good operation for mild cases. The cases I have in mind are those where the uterus and vagina hang out completely. I cannot imagine that Dr. Goffe in suturing a prolapsed bladder to a prolapsed uterus can make either of them stay up. In mild cases of descensus, I don't do these extensive operations. I am specially asking all my friends and particularly all my friends working at the dispensary to give me the nasty cases. Those are the ones I want and those are the ones which really give splendid results with this operation.

I wish to say, because it has been mentioned, that the uterosacral ligaments are treated by me with supreme contempt. I place no faith whatever in a stretched-out uterosacral ligament in an extensive case of prolapse.

Two gentlemen mentioned hysterectomy as treatment of prolapse. I never do a hysterectomy for prolapse. If a prolapsed uterus is the seat of carcinoma I may extirpate for carcinoma, but I do not expect to cure prolapse by extirpation. In cases in which hysterectomy was done, a sac of extruded bowel is liable to form and in this con-



dition it is practically impossible to effect a cure by plastic work. I have two cases in mind which I have seen in the last two years which presented this condition and in both cases I failed with a plastic operation. I know of only one operation successful in these cases and that is total extirpation of the vaginal wall with complete obliteration of the space between the bladder and rectum by suture. One of my patients absolutely refused to have this obliteration done.

I have heard special emphasis laid on the pubovesical ligaments. Those of you who have not had the opportunity of studying these in the cadaver might take the trouble to look them up in Edward Martin's Atlas, where you can get very excellent pictures of the pubovesical ligaments. I think they are about as much used as the uterosacral ligaments. If they happen to come out fairly distinctly in the dissection, I suture them together. I do not place much faith in their ability to hold up a prolapsed uterus. They happened to come out well in this particular case of which I had the films made. They don't come out that way every time.

I have been asked why such a big denudation. I am not at all partial to the big denudation. As I mentioned in the beginning, all I want to do with an incision is to get to the deeper layers. If you want to make it crosswise or lengthwise you can suit your own taste and do so. I think one thing that is in favor of this combination of operations is the fact that it is so elastic that it can be applied to the individual case and the varying requirements thereof. There are no hard and fast rules. This is not a typical operation. It is an operation which appeals to the operator who wants to use his judgment in each individual case.

I have been asked whether I sterilize every case of this operation. Every patient with prolapse, if she is of the child-bearing age, is asked whether she wants more babies or not. If she decides that she does not want any more and her husband is willing and both have signed a statement to that effect, I go ahead and sterilize her. If she desires more children I do not sterilize her. Of those whom I have sterilized not one has become pregnant. The one who became pregnant was not sterilized.

I have been very much pleased to find that the gentlemen took so much interest in the deep culdesac. I heard one of the gentlemen speak of a sliding down of the culdesac. There is no sliding down. It is a congenital condition. You are, of course, all aware that in the embryo this condition of the deep culdesac is normal. In the normal development of the embryo the culdesac moves up.

With regard to the operation for prolapse of the rectum, which I have done, I would say that I have read Dr. Moschowitz's paper and am familiar with his work in this line. This obliteration above if you do not obliterate the entire culdesac, leaves a deep culdesac below the obliterated upper portion. If you obliterate above and do not obliterate all the way down, then you leave the rectum and vagina unattached to each other. Even if you do obliterate above, it doesn't hold and the vagina will come down and, as one gentleman mentioned, you must do an operation for this condition afterward.

## TRANSACTIONS OF THE BROOKLYN GYNECOLOGICAL SOCIETY.

*Meeting of January 4, 1918.*

*The President, DR. RALPH M. BEACH, in the Chair.*

DR. JUDD reported a case of

### URETERAL CALCULUS REMOVED BY THE VAGINAL ROUTE.

My experience has led me to abandon the transperitoneal route in operating on the ureters for stone in favor of the vaginal route. I reported the removal of one case last Spring and I desire to report another. My patient had a history of frequent urination and the cystoscopist proved the stone by x-ray and catheter. This was followed by splitting of the ureteral orifice in the bladder and allowing the patient to walk around for a while, but it did not prove successful. I removed the stone yesterday, isolating it through the vault of the vagina, splitting the ureter as we would the cystic duct. Those who have not tried it will be surprised at the ease with which it may be done. The vaginal vault is divided over the ureter and a ligature is applied to hold it and then by splitting the ureter in an oblique direction you can isolate it by means of a blunt hook.

DR. JUDD also reported a case of

### FIBROMYOMA COMPLICATING PREGNANCY.

C. H., aged thirty-five, born in Germany, occupation housewife. Chief complaint: atypical menstruation for the past three months, cramps in lower abdominal region occurring about once a week, lasting ten to thirty minutes at a time. Family history: father and mother died of tuberculosis; one brother and three sisters alive and well. Menstrual history: menstruation of the thirty-day type; duration two to three days; no dysmenorrhea or menorrhagia; not much irregularity up to the time of the onset of the present trouble; last period Dec. 4, 1917. Marital history: para-ii; last child thirteen years ago; hard labors; instrumental deliveries; no postpartum infections. Present illness: began three months ago when patient found that she was menstruating irregularly, periods lasting only a day or so. About this time patient noticed cramps in lower abdominal region having no relation to the menstrual period occurring about once a week and lasting from ten to thirty minutes. Patient has not skipped any periods. This patient was operated upon a week ago to-day. When I first saw her my attention was called to the presence of fibroid in the cervix; there was a hard uterus, somewhat

enlarged, and a suspicious softening in the upper part. I examined her again and was suspicious of pregnancy. At operation a fibroid uterus with a complicating pregnancy was found.

#### DISCUSSION.

DR. POMEROY.—I examined this patient and having been requested to make a decision I made one. I could not make a diagnosis of pregnancy, the point depending upon determining the consistency of the corpus uteri. There was a hard cervix, with no definitely palpable body. I speak feelingly as we are frequently put in a position requiring us to determine whether we are dealing with a fibroid condition that simulates pregnancy. I have here a specimen which I exhibited at the New York Obstetrical Society. This patient menstruated regularly and never had a pregnancy, but when I first examined her the uterus felt like an incarcerated retroverted four months' pregnancy with a positive Hegar sign. At the hospital we examined under anesthesia. There was no hemorrhage, and after repositing the uterus I sent her home with a large ring pessary supporting the uterus in the normal position. She reported a month later after menstruation and we took out the uterus.

DR. POLAK.—I have made these mistakes myself and on more than one occasion. I want to report two cases, one of which occurred some years ago, and the other recently. One was a young woman, married, twenty-two years of age, who came in with a large abdominal tumor in the center of the abdomen and in the culdesac. I said she had a fibroid, decided she was not pregnant and operated. I brought the uterus out, examined it and returned it to the abdomen in the belief that she was pregnant and sewed up the abdomen. Queer as it may seem she stuck to me and came back after a period of eleven months. I tried to persuade her that she must have had a miscarriage but she would not admit it. I did a hysterectomy and found two tumors and between the two there was a space which gave a feeling of elasticity. The lower tumor was a myoma. It is claimed that when you get a pregnant uterus out of the abdomen it will change color and that was what this one did.

The second case occurred only a few weeks ago. She was a woman sent in with irregular bleeding and upon examination I found an incarcerated adherent mass in the culdesac. She was forty-one years of age. The bleeding was of the grumous type a little darker than the ordinary ectopic. The bleeding had been present for about six weeks. I operated on this woman, making a diagnosis before operation of incarcerated adherent fibroid with the uterus displaced to the right. We found a subperitoneal fibroid and the uterus, pushed up to the right which I had not paid any attention to, was a pregnant uterus.

The first paper of the evening was then read by DR. ALFRED W. WHITE.

#### GALL-BLADDER DISEASE COMPLICATING PREGNANCY.\*

\* For original article see page 821.

## DISCUSSION.

DR. POLAK.—I have operated on eight cases of gall-bladder disease during the puerperium and what has impressed me most is the activity of gall-bladder disease during this period. These patients naturally had the disease prior to the pregnancy as I do not believe it comes on so rapidly, but the symptoms complained of were manifested the first ten days of the puerperium. All of the cases presented stones, distended gall-bladders with mucopurulent material. The interesting question to me in the case cited by Dr. White is why the gall-bladder was not removed in the first operation. In the second operation I can see that on account of the cholangitis (cholecystitis) present, it was proper to introduce the T-tube, but in the first operation where there were adhesions why was it not removed? It brings out the question of what to do in these cases. While I am not an abdominal surgeon I feel that there is one definite point to be considered and that is where gall-bladder disease is confined to the gall-bladder it is best to remove the gall-bladder, but where there is cholangitis it is best to drain with the T-tube. Drainage will relieve the cholangitis which is the factor that produces the jaundice, and I want to bring this point out as it is not thoroughly understood.

DR. POMEROY.—We certainly have ground for speculation but require further observations before we attempt to definitely associate gall-bladder infection with the toxemias of pregnancy. My most recent suggestive picture was a delayed case diagnosed as ectopic, which I operated upon a few weeks ago, where the abdomen was filled with blood and the patient was suffering from acute jaundice, with bile in the urine.

DR. PFEIFER.—Dr. Pomeroy's case brings to mind a neglected case of ectopic which came under my observation last spring where the symptoms were as much in the upper part of the abdomen as in the lower. The operation proved the diagnosis.

The second paper of the evening was then read by Dr. Ross McPHERSON, of Manhattan, (by invitation) entitled

## THE CONSERVATIVE MANAGEMENT OF ECLAMPSIA.\*

## DISCUSSION.

DR. JUDD.—Some years ago when I had the obstetric service at the Kings County Hospital I treated eclampsia radically. My figures when we had a large number of cases showed a maternal mortality of 40 per cent., and my mortality was high because the cases seen at that hospital were mostly *in extremis*. In looking up the literature at the time I came across a paper written in 1860 where this condition was treated by the author with large doses of morphia. Since that time, however, I have continued to treat these cases radically. I feel that the opinions expressed by Dr. McPherson are very timely and we ought not to scoff at the ideas in the paper

\* For original article see AM. JOURN. OBST., January, 1918, page 119.



but should give the conservative method recommended by him a trial without delay.

DR. POLAK.—I have been much impressed by Dr. McPherson's paper. I have been groping around for five years trying to reduce our mortality in eclampsia. There is one thing to be considered in the report of these cases and that is that there are certain types of eclampsia and a certain mortality in each type. We have found this to be so and when we thought we had the treatment we wanted and went on with our cases with what we thought were extremely good results we would come to grief and would have to rebuild our methods entirely. The general trend of opinion among obstetricians who have tried out all surgical methods is that we cannot reduce the mortality at present below 33 per cent. In the last few cases we have come to the conclusion that we are all wrong and have begun to use the method suggested by Dr. McPherson, and we are going to run a series of cases and see if we can bring about a similar series of results. If we can bring it down from 33 per cent. to 11.3 per cent. there is no cause for criticism.

DR. POMEROY.—There certainly are waves in the types of eclampsia such as Dr. Polak has referred to, and it does not seem possible to treat all cases alike. I have hoped that some one might discover a reasonable way not only of differentiating types of cases but also of selecting types of treatment. I have no hesitation in agreeing that we must work out methods for treating the average cases, but I still believe that some cases can be solved by delivery and getting the immediate stress over. The statement by the doctor as to the effect of morphine on babies in "dammerschlaf" is not in my opinion a just comparison, as in eclampsia we are dealing with a toxic state of the mother and you cannot compare the doses and their effects as you might in a normal child and a normal mother.

DR. HOLDEN.—I should like to ask Dr. McPherson when the dose of one-half grain is given and one-quarter every hour thereafter until the respiration is down to eight per minute what is the average time before that point is reached? Also what is done with cases where there is broken heart compensation.

DR. BECK.—I think this method has much to commend it from the fact that it can be used by almost any practitioner. I believe many cases are lost because the patient has been neglected, due largely to the fact that the man originally in charge of the case was not competent and had failed to demand hospital treatment. With a method such as this the patient can be immediately placed under treatment, and many patients saved.

DR. JUDD.—I should like to relate a case and ask what would be suggested. A woman at term, primipara, thirty-six years of age, blood pressure 240, with all the preliminary symptoms which might indicate an eclampsia. The cervix soft and the parts dilatable. Would the doctor say do not use dilating bags or induce labor but use morphia?

DR. BEACH.—I hope Dr. McPherson will tell us whether it is the practice in this method to make any efforts to induce labor. My

experience with morphia is limited but I remember one case in which I used it, a six and one-half months' pregnancy where convulsions had commenced. After the use of the morphia the convulsions stopped, the patient came out of the comatose state, the urine increased, but there was no labor. Four days later convulsions again came on. It is a question whether labor should not have been induced at the first onset.

DR. MCPHERSON.—Let us refer for a moment to the "Rotunda" treatment. When we speak of waves of eclampsia going over the country it is apparently true, but the Rotunda Hospital has been doing this work for more than fifteen years and year after year they have reduced their mortality. The Rotunda figures for 1914, showed a mortality of 9.2 per cent., in a very large number of cases. As to the remark of Dr. Judd. I read a paper recently and when I got through an old man of seventy-five got up and said, as he shook his head: "That has been my treatment for fifty-four years." So there is nothing new in it. In regard to the case recited by Dr. Judd I should not give morphia because there had been no convulsions. I should put in the bags and induce labor expecting to reduce the pressure. In working out a series like this I had to have some fixed rule. As to when to stop the sedative. I remember one case in which we used the morphine until the convulsions were pretty well stopped but she was in bad condition and when I went home I believed it was hopeless. The house surgeon later called me up and said she would die in fifteen minutes and asked permission to do a postmortem Cesarean section. That afternoon when I went in I saw she was in labor, the head was down on the perineum at the time he called me and in the effort at expulsion she became cyanotic. She had edema of the lungs and seemed an impossible case, but she recovered. Regarding the point asked by Dr. Beach as to induction of labor and the return of the convulsions. At the Rotunda Hospital they would discontinue the use of the morphia when the convulsions stopped and if they did not go into labor they would be sent home provided the pressure and urine allowed it, and if the convulsions returned they would be morphinized again. I had one case where we stopped the convulsions and when she recovered she refused to stay in the hospital. She came back in a month and was delivered normally. Regarding the method of delivery apparently I have not made it quite clear, but I think it should be done as soon as possible and there undoubtedly are cases where if induction is easy it is proper to do it, but it has just happened that our cases have gone into labor spontaneously. Regarding Dr. Holden's question as to the length of time of the action of morphia I cannot give the exact time. As to Dr. Pomeroy's remark about types of cases, this is true, but where a woman has convulsions the type does not matter as long as the pelvis is normal, and it is not so much a matter of distinguishing between types as it is to relieve the immediate condition. We have begun to use this routine procedure and we are trying to see how it works out. Routine in obstetrics is wrong, but in a condition like this you cannot handle it in any other way, you must be

didactic. I do not quite agree with Dr. Pomeroy about the effects of morphine and scopolamine, where the dose is perhaps one-sixth of a grain. I have seen two or three hundred cases and have not had any trouble, the babies have cried promptly. I have seen cases of eclampsia where five grains of morphia have been given, and one would think it would show, but the babies have cried lustily when born. I do not believe the morphine has any effect on the babies in the dosage given. The routine is one-half grain when the patient is first seen and the one-quarter grain hourly until the convulsions cease. We had one case where the patient got so much morphia that the respirations went down to three per minute but she came out of it without trouble. I remember a case before this method was tried where a patient had thirty-five convulsions and the physician in charge wrote for one-third grain of morphia. The nurse read it three grains and gave the dose. The woman got over it and there were no more convulsions. I think if we can get away from accouchement forcé and have an intermediate method, perhaps in some cases to induce labor, we can accomplish what we are after, and do better than has been done in the past.

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## BRIEF OF CURRENT LITERATURE

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### OBSTETRICS.

**Deafmutism and the Education of Deaf Mutes in Switzerland.**—Seibenmann (*Correspondenz-Blatt für Schweizer Aerzte*, 1918, xlviii, 2) states that while the average incidence of deafmutism in other European countries is about eight per 10,000 inhabitants, in some Swiss cantons it is between forty and fifty (census of 1870), a number thought to be far too low, perhaps not 50 per cent. of the actual number. This great disparity is accounted for by the very large number of cretins and cretinoids who are deaf and dumb. Goiter, cretinism, idiocy and deafmutism spring from a common source and represent a purely endemic state. At the present time less than a thousand deafmutes are receiving custodial care and education including a small number in special asylums for feeble-minded deafmutes. Naturally many in the purely educational institutions show mental defect. A new census is urgently demanded. Apparently there is no first-hand knowledge of sporadic deafmutism as distinguished from the endemic form. The system of education, in as far as it makes the deafmute self-supporting, seems to leave much to be desired.

**On Whole Flour in the Nutrition of Nurslings.**—Feer (*Correspondenz-Blatt für Schweizer Aerzte*, 1917, xlvii, 1777) states that since May, 1917, the law has required that at least 87 per cent. of the wheat must be milled. Whole wheat bread is preferred by the sound adult to the older *ante bellum* article. In 1915 the author began to study the reaction of nurslings to whole



wheat flour. He first chose very young infants who were being fed artificially. Although perfectly sound nurslings do not come to the clinic, the 80 per cent. to 87 per cent. whole flour was as well tolerated as the finest milling. The flour ration was, of course, only a part of the dietary. An infant in the third month received 15 grams daily and one in the sixth month 30 grams daily and upward. As a rule, fine flour was first tested and if this agreed well it was replaced by the whole wheat flour, in the same quantity. The scales were used twice daily. A trial of one week was deemed sufficient and many infants have used the entire flour for several months in the form of gruels and porridges. In hardly a single instance did intolerance develop.

**A Placental Theory of Eclampsia.**—Bory (*Le Progrès Médical*, 1918, xlvii, 12) states that our knowledge of this subject began in 1901, when Cocchi found that injections of placental substance cause lesions of the kidneys and liver. Since then a considerable literature on the subject based on laboratory finds has come into being, in the midst of which the discovery of placental hormones and Abderhalden reaction was interjected. The assumption seems warranted that physiologic syncytiolysis is the fundamental process which makes eclampsia possible. Secondary factors comprise the presence in blood serum of a substance which activates the placental enzyme or toxin, and the absence of some inactivating substance which normally protects the organism, and which is analogous to the toxo-lecithides of serpent venom. The theory of anaphylaxis does not militate against the preceding view but rather upholds it; for the mechanism involved in sensibilizing the gravida to a poisonous principle presupposes the absence of some immune body. But while the reaction of the gravida toward the absorbed placental villi is a fact and valuable as far as it goes, it does not by any means account for eclampsia as a whole.

**Attempts at Abortion and Malformations of the Fetus.**—Mme. Nageotte-Wilbouchewitch (*La Presse Médicale*, 1917, xxxv, 721) relates a number of cases which tend to show that threatened abortion, attempts to interrupt pregnancy, etc.—in short any influences which may subject the uterus to mechanical or physiological insults—may cause arrest of development in the fetus. In the cases related, the heredity was good and children of earlier or later pregnancies normal. The anomalies of growth varied from idiocy to mere defects of some osseous or articular unit. Among abortifacients both drugs and instrumental procedures are included. One woman who made a desperate attempts to catch a train and collapsed did not abort although conditions were most favorable. Another woman, probably unaware that she had conceived, received some strenuous abdominal massage. In every case related the insults occurred in the embryonal period of intrauterine life, and as already stated, every malformation could be classed under arrest of development.

**Familial Incidence and Return Cases in Diphtheria.**—Langer (*Jahrb. f. Kinderheilkunde*, 1917, xxxv, No. 3—abstracted in



*Correspondenz-Blatt für Schweizer Aerzte*, 1918, xlviii, 60) states that the index of contagion in 7701 cases of diphtheria treated in hospitals in Prague and Graz was 0.33; *i.e.*, of 100 individuals exposed 33 contracted the disease. The index as found elsewhere had been computed as 0.10-0.15. Two groups may be formed, one of which comprises familial cases which develop in advance of exposure to a returned convalescent, while the other is made up of return cases of the 7701 cases but 97 belonged under the latter category. Cumulation of cases in a family is less frequent than the isolated case and seems to depend on enhanced family susceptibility.

**An Unusual Source of Severe Genital Hemorrhage.**—Klein (*Zentralbl. f. Gynäkol.*, 1917, No. 32—abstract in *Correspondenz-Blatt für Schweizer Aerzte*, 1918, xlviii, 29) relates the case of a twenty-six-year-old single patient who came under treatment for severe genital hemorrhage. Ergotine and hypophysin were of no avail. Curettage showed absence of abortion. Although the temperature was 104.5° the pulse was good. The blood was fetid and hysterectomy was thought of. A second use of the thermometer showed afebrile status, which aroused suspicion. A bottle of putrid ox blood was found hidden in the room and for this was substituted an aqueous solution of methylene blue. Three hours later the bedding was found saturated with the latter. The motive for simulation seems to have been avoidance of a pending term in prison. After her discharge the patient was received into another hospital for simulated bladder hemorrhage.

**Albumosuria in Pregnancy.**—Tanberg (*Norsk Magasin for Lægevidenskaben*, 1918, lxxix, 41) relates a case of albumosuria in a para-iii, seventh month. She had felt ill during the entire gestation period, had vomited steadily and by the sixth month had complained of the degree of abdominal swelling. There was on admission no albumin in the urine. Her symptoms soon became aggravated as edema and oliguria developed with albuminuria. Diet produced no improvement. The fetal movements, heretofore active, were no longer perceptible. A few days later she gave birth to a stillborn infant. All her symptoms at once improved and she has since gone through gestation without discomfort and bore a healthy child at term. The case was at first sight simple—hydramnios and fetal death. But the urine first passed on admission, although free from albumin was shown at the time to contain albumose. In a few days albumin was added to the urine in which albumose still persisted; and while albumin had vanished from the urine on the fourth or fifth day *postpartum* albumose was present until the eighth or tenth day.

**Repeated Cesarean Section for Oblique Coxalgic Pelvis.**—J. F. Arteaga and J. A. Presno (*Revista de med. y Cir. de la Habana*, 1917, xxii, p. 587) did a second Cesarean section in this case not only on account of the pelvic deformity but also because they feared a rupture of the uterus at the site of the first incision, the patient being a very weak woman with a previous history of tuberculosis of the joints. It was claimed that impregnation was not suspected by

the woman, as she had both oviducts ligated at the first operation. To prevent further conception both tubes were doubly ligated and then resected at the second operation.

**Eclampsia Treated with Magnesium Sulphate.**—Kaas (*Hospitals-tidende*, 1917, lx, 776) relates the following case of postpartum eclampsia. The patient, primipara, had had scarlatina with renal complications as a child, and formerly suffered with convulsions of some sort. During gestation she was in good health save for some edema of the legs toward term. The child and placenta were delivered without trouble and the first convulsion occurred two and a half hours postpartum. The ensuing attack was followed by cyanosis and rapid, irregular pulse. An initial injection of morphine was followed up with pantopon and oil of camphor and these in turn by magnesium sulphate. There were not many convulsive crises but patient was in a coma-like state. Next morning she was better, passed much urine (albuminous) and showed a blood pressure of 150. Hemoglobin was down to 65. There were no further symptoms of eclampsia. The author attributes the recovery to the magnesia (one hypodermic, 10 cm. of 25 per cent. sol.). As far as he knows his only predecessor is Riismann who obtained a good result after an intradural injection of 5 cm. of 15 per cent. solution of magnesium sulphate.

**Status Epilepticus in Pregnant Women** (*Status epilepticus hos Svangre*) *Hospitalstidende*, 1917, lx, 693.—Albeck, the head of a maternity hospital, has notes of labors in twelve epileptics, and publishes a case each of status epilepticus during delivery and eclampsia in an epileptic. In the first case attacks began during labor and continued for a time after delivery of vaginal Cesarean section. The blood pressure was 110, urine free from albumin. The second case was adjudged to be eclampsia or rather status eclampticus without convulsions. The epileptic seizures had been controlled by bromides. A blood pressure increase to 210 with albuminuria 7 per 1000 together with optic neuritis showed that "eclampsismus" was present. The diuresis fell from 3000 c.c. daily to complete anuria. The infant was delivered by vaginal Cesarean section and survived. The blood pressure fell to 110 while the diuresis rose to 2900 c.c. daily. There is no mention of convulsive seizures of any kind.

**Uteropelvic Thrombophlebitis.**—Vignes (*Journal des Praticiens*, 1917, xxxi, p. 713) states that thrombophlebitis occurs in about 32 per cent. of puerperal infections; that is to say, in one case in three it is the sole or principal lesion. He asks a number of questions. Is this affection an anatomoclinical entity? What are its relations with milk-leg? What are its relations with pyemia? Is an early diagnosis possible? He replies to these questions in part as follows: it is an entity; milk-leg may or may not coexist; it may or may not end in pyemia. The problem of early diagnosis is a delicate one. There is no pathognomonic sign. A rise of temperature, however slight, with tachycardia should at once lead to an examination of the veins of the pelvis. At times the earliest evi-

dences are emboli in the lungs, which are minute and seldom fatal. The fully developed disease is characterized by a number of symptoms of which the author enumerates seven. Hemoculture, which should be frequently practised, is often negative, and when positive should point to pyemia. Local evidences of thrombosed veins in the pelvis as determined by combined palpation may be absent. The mortality of 60 per cent. given in reference works is much too high because of missed diagnosis of benign cases. The author adds nothing to the treatment, as laid down in surgical manuals.

**Elderly Primiparæ.**—Kouwer (*Archives mensuelles d'obstetrique et de gynécologie*, 1917, vi, 207) reaches the following conclusions based on an analysis of more than 5300 primiparæ: The duration of labor increases with the age of the primipara because of the diminution of contractions. The proportion of forceps cases augments in the same proportion. This influence of age is already manifested after the age of twenty-four years. This phenomenon is probably the result of functional weakening of all the organs and involves the endocrine glands which act upon the uterus, presiding over the modifications of pregnancy. This weakening is motivated by retardation of the physiological evolution of the female organism as a result of suppression of function. The interval between menstruation and the first labor should not exceed six or seven years.

**Postpartum Eclampsia.**—Hauch (*Archives mensuelles d'obstetrique et de gynécologie*, 1917, vi, 224) has seen 140 cases of eclampsia in about 8600 confinements during a period of 6½ years' service in the maternity clinic of the Rigshospitalet. Of the 140 cases 19 were examples of postpartum eclampsia to which number the author adds a private case. Of the score of women six only were multiparæ. The average number of convulsions in primiparæ was 6; in multiparæ, 4. The ages varied from 14 to 42 but age does not seem to have been a factor in severity. Of the 20 women 16 went to term, but the factor of prematurity did not affect the results. The author did not lose a mother and all the children had been safely delivered before eclampsia developed. In the 10 more severe cases venesection was practised, from 450 to 1000 c.c. of blood having been abstracted (average 660).

**Histogeny of the Papillæ in the Serous Ovarian Cyst.**—Jännes made a histological study of 18 typical cases of this condition (*Finska Läkaresällskapets Handlingar*, July, 1917), which is illustrated with 12 text figures illustrative especially of the ramifications of the papillæ. He was led to this study largely because of the work of Wichmann on parovarian cysts, and agrees with the latter that the end-papillæ with their hydatid-like vesicles do not exhibit any evidence of retrograde metamorphosis. Rather are they sound tissue; although rendered highly lax by swelling or edema. In papillæ, the stroma of which consists otherwise of a firm fibrous tissue, we find, beneath the terminal ramifications, in both connective tissue and epithelia as active a proliferation as anywhere else in the tumors. Where, however, the stroma of the papillæ is especially lax and otherwise approximates the structure of adenomatous papillæ, the actual



connective-tissue proliferation is more or less inconsiderable in comparison with the rapid growth of the epithelium and with the abundant vascularization of the subepithelial tissue with strongly dilated thin-walled blood-vessels. By reason of the great number of examinations of various stages of development of the end-papillæ which suggest hydatid vesicles, the author reached the view that the papillæ of the serous ovarian cysts arise in a manner similar to that imagined by Wichmann in connection with the papillæ of parovarian cysts—the subepithelial layers of connective tissue, often rich in nuclei, become swollen with edema fluid of whatever character; and at the same time with the proper epithelial layer—itsself markedly proliferating—is raised up and extended into a large, rounded prominence. After the completion and even during the formation of the terminal ramifications which suggest hydatid vesicles the entire laxative edematous stroma becomes organized as a result of connective-tissue proliferation, which originates in the abundant nuclei of the basal tissue. Alongside of these progressive alterations in the epithelial and connective tissues evidences of degeneration are perceptible in the end ramifications. The author is opposed to a subdivision of ovarian cysts into “fibroma” and “adenoma,” according as the cyst is uni- or multilocular; for in both types of cysts all shades of transition are in evidence. The greater the proliferation of epithelium the more adenomatous will be the papillæ and *vice versa*.

**War Amenorrhea.**—Horn (*Norsk Magazin for Lægevidenskaben*, December, 1917) publishes a joint review of four German articles on this subject. Two authors, Schweitzer and Graefe, often noted the presence of amenorrhea in normal women with history of regular menstruation. The disorder was regarded as functional, the result of underfeeding and overexertion. The duration had been as long as three months, one year, even two years. Conception seldom occurred during the suppression of menses. The latter became most prominent in the clinic in 1916. Percentages of cases in clinics vary greatly—from less than 1 per cent. to as high as 6 per cent. Hannes noted a percentage of 3.1 in the winter of 1916-17 in Breslau—a great increase over the previous year—with no sign of improvement. The duration of suppression reached six to nine months, even more. The majority of women were of the laboring class and believed themselves pregnant. According to Grünebaum the same condition obtains in the French women of the conquered provinces. In twenty-seven women examined by him he found three cases of amenorrhea.

**Unusual Indications for Cesarean Section.**—Creutz (*Finskaläkaresällskapets handlingar*, 1917, lix, 1221) describes seven cases of classical Cesarean section in which the indications were unusual. In two the indication was pelvic, described by the author as an insufficiency of the pubic symphysis (softening), marked toward the end of labor. In the third case the indication was placenta previa with labor barely started, and the fetal heart sounds irregular. The fourth patient had total placenta previa with cardiac decompensation. In the fifth case there was a presumption of dead fetus with known



pelvic contraction. Of particular interest was the sixth case. The woman had given birth to two dead fetuses, probable cause of death premature detachment of the placenta. Cesarean section was done to anticipate such a contingency and the presumptive condition actually discovered (beginning separation of placenta). The seventh woman was operated on for transverse position of fetus. In this series all mothers and children survived the intervention in good condition.

**Case of Polymastia.**—Cramer reports a case of this malformation (*Revue médicale de la Suisse romande*, 1917, xxxi, 715) in a woman aged fifty-four who presented a supernumerary mamma at the posterior angle of the left axilla. The gland did not enlarge during gestation or lactation; on the other hand it did enlarge in company with the normal breasts at menstruation. After the menopause the supernumerary breast had continued to swell at monthly intervals, and the same behavior was noted in the normal breast. A gland could be palpated in the former and the nipple, well developed, was erectile. The woman was twice married and a daughter by her first husband now grown has shown no anomaly of breast development (the malformation not infrequently descends directly in the female line). The location of this gland is believed to be unique. It straddled the lower border of the axillary fold in such a manner that the posterior portion was seated on the back with a total diameter of from 6 to 7 cm.

**Indications for Cesarean Operation in 29 Personal Cases.**—Cumston (*Revue médicale de la Suisse romande*, 1917, xxxi, 691) reports twenty-nine cases of Cesarean section without maternal mortality. Of 33 infants delivered, all survived but one. The indications were as follows: rachitic pelvis seven cases (three operations on one woman, and two on two women which accounts for the excess of infants over mothers); complication of fibroma uteri, fourteen cases; complication of cancer uteri, three cases; complication of heart disease, three cases; large fetus and premature detachment of placenta, each one case. The operations were all performed under the most favorable conditions possible, not only for the particular case but for any case—ideal conditions.

**Certain Indications for Cesarean Operation Other than Contracted Pelvis.**—Aubert (*Revue médicale de la Suisse romande*, 1917, xxxi, 703) enumerates many conditions under which the classical Cesarean operation has been performed—rigidity and stenoses of the soft parts, placenta previa (first done successfully by Bernays in 1894), eclampsia, fibroma uteri, carcinoma of the cervix, ovarian and parovarian cysts. For all of these indications there is a considerable literature from which it appears that the classical Cesarean section has gradually displaced Porro's operation to a notable extent. Of less common indications may be mentioned gestation after operative fixation of the uterus, vicious presentations, uterine malformations, premature detachment of placenta and uncompensated cardiac affections.

**Reappearance of the Menses in a Negress Aged Ninety-two Years.**—De Jongh describes and illustrates the case in the *Revista de Medicina y Cirugia de la Habana*, 1917, xxii, p. 429. With the return of the menses after fifty years of suppression the woman became rejuvenated, although when she was sixty years old she was already entering upon senility. She behaved like a young woman, full of life, warmth and youthfulness. Her eyes were bright with dilated pupils and she made advances toward the fathers of her children. This rejuvenescence, however, was associated only with the five days of the menstrual period. In the intermenstrual cycle she was apathetic and hardly spoke. At the time of writing she had menstruated regularly five times. During these periods the breasts became swollen and there was an acid discharge from the vagina with pruritus vulvæ.

**Treatment of Infection Following Labor, Mature and Premature.**—P. B. Bland (*Penn. Med. Jour.*, 1917, xxi, 28) holds that in the presence of general infection, there is no indication for local interference and its employment will only court disaster. Do nothing locally, avoid manipulation, shun packing, shrink from irrigation and scorn curettage is his advice. In cases of infection associated with material confined within the cavity of the womb, providing the cervix is open, the treatment should consist in gently removing this substance either with the finger or with placental forceps, but under no circumstance should the removal of the retained contents be followed by any form of irrigation or by curettage. If the cervix is contracted and closed and the material cannot be reached and easily withdrawn, leave it absolutely alone. The treatment of infection following abortion, whether spontaneous, induced or criminal, should be along the same conservative lines as outlined for the treatment of infection following labor at term. Our whole aim should be directed to economization and conservation of life and tissue, and these factors are better accomplished by relying on the power inherent in nature than by instituting mischievous and dangerous surgery.

**Management of Pregnancy Complicated by Severe Cardiac Lesions.**—G. Gellhorn (*Interstate Med. Jour.*, 1917, xxiv, 842) says that only a comparatively small percentage of women with cardiac lesions, who are pregnant, suffer a decided deterioration of their condition. But such patients may become critically ill from loss of compensation. Practically all recent American text-books on obstetrics omit mentioning the cardinal value of vaginal and abdominal section in such cases, and none of them acknowledge the paramount importance of avoiding narcosis, and the particular value of spinal anesthesia. The writer formulates rules for obstetrical conduct in the various categories of cases in which the heart lesion has become unmanageable. When it becomes necessary to interrupt pregnancy the guiding principle is to act with rapidity and decision. Usually there will be time to make at least an attempt to relieve the decompensation and to tide the patient over until the fetus is viable. But if the patient does not respond promptly to medicinal, hygienic, and dietetic measures, the immediate termination of pregnancy is strictly

indicated. In the first three months of pregnancy the natural mode will be instrumental dilatation of the cervix sufficient to admit one finger and to evacuation of the uterus with finger and curet. Where sufficient dilatation cannot be accomplished without tearing deeply into the cervical tissue, the bougie method and vaginal hysterotomy ("vaginal Cesarean section") should be employed. The introduction of a bougie with or without tamponade of the cervical canal and vagina has the great advantage of simplicity. Its signal disadvantage is the length of time required until the cervix is sufficiently wide for spontaneous or artificial evacuation of the uterus. Vaginal hysterotomy, on the other hand, can be completed in from twenty-five to thirty-five minutes, and reduces the loss of blood to a minimum. Any inhalation narcosis is contraindicated. Two methods of analgesia will not harm the heart of the patient: scopolamine—morphine narcosis ("twilight sleep") and spinal anesthesia. After the eighth month the consideration of the viable fetus introduces a new factor. Three methods come into competition: the bougie and tamponade method, the introduction of hydrostatic bags, and abdominal Cesarean section. The former two may be employed in multiparæ with only slight degrees of decompensation, while in severe forms of the latter and in primiparæ they seem greatly inferior to abdominal section. Sudden changes in the pressure conditions during the second stage seem to be lessened in Cesarean section provided it be done under spinal anesthesia. Abdominal Cesarean section is the quickest and most efficient mode of delivery. If decompensation occurs at labor, finish delivery as quickly as possible. According to the stage of labor, the condition of the cervix, and the position of the presenting part, the intervention will vary between forceps and version with extraction. Only in rigid cervixes with intact or but recently ruptured membranes will abdominal Cesarean section be necessary. Excessive speed in instrumental delivery creates a quick drop in the intraabdominal pressure, a condition which must be minimized in any patient with cardiac lesions.

Illustrating this method of treatment, H. Meyers (*Interstate Med. Jour.*, 1917, xxiv, 848) reports a case of pregnancy complicated by uncompensated heart disease. A patient with a serious valvular heart lesion suffered a marked aggravation of her condition during her pregnancy. Appropriate treatment carried out energetically for more than two weeks fail to relieve the symptoms of decompensation. Therefore interruption of pregnancy was carried out by vaginal Cesarean section in spinal anesthesia. The relief following the operation was instantaneous. The patient left her bed on the eleventh day and the hospital in twenty-one days following operation with her heart fully compensated and her general health restored.

**Treatment of Eclampsia.**—R. W. Holmes (*Med. & Surg.*, 1917, i, 586) summarizes the most recent opinion on the treatment of eclampsia as follows: Chloral hydrate 15 grains with morphia  $\frac{1}{4}$  grain. In two hours the chloral is repeated, and in three or four hours the morphia. Thereafter, the two drugs are exhibited as often as the condition of the patient requires, this depending on the time the effects



of the drugs wear off, or on the evidence of recurring aggravation of symptoms. At the same time, such methods are instituted as will tend to secure elimination (catharsis, diaphoresis, and diuresis). When the condition of the parturient canal permits it, then operative delivery should be accomplished. No chloroform should be given; oxygen should be given during the convulsion.

**Organotherapy of Menstrual Disorders.**—E. Novak (*Med. & Surg.*, 1917, i, 577) believes that in the organotherapy of menstrual disorders, the physician's armamentarium may well be limited to extracts made from the thyroid, ovary and the pituitary body. If menstruation does not appear at the normal age, and if such a primary amenorrhea is associated with other evidences of lack of development, it is probable that the fault lies with the ovaries or the pituitary, and hence administration of extracts from these glands is indicated. In certain cases delayed puberty appears to be a manifestation of hypothyroidism, although the latter condition more frequently causes menorrhagia than amenorrhea. The most common type of functional amenorrhea is designated as adiposogenital dystrophy or Fröhlich's syndrome. Its two principal characteristics are obesity and sexual hypoplasia, the latter manifesting itself in the woman most conspicuously by scantiness or absence of the menstrual flow. The rational treatment of Fröhlich's syndrome would seem to be the administration of pituitary substance to counteract the hypopituitarism which has been shown to be responsible for the condition. The results yielded by this substance, whether given by mouth or hypodermically, have been unsatisfactory. Somewhat better results are obtained from the exhibition of ovarian substances or of thyroid extract. The writer's best results have been with thyroid. He has often used thyroid and corpus luteum extracts together with good results. The menorrhagia of hypothyroidism is at times observed in girls in whom menstruation has appeared late and in whom there are other evidences of tardy development. The treatment of uterine bleeding of hypothyroid origin consists essentially in the administration of thyroid extract under rigid supervision. The average dosage of thyroid extract in these cases of mild hypothyroidism should never exceed 5 grains a day, and in most cases it will be much less. The patient should be observed at least once a week to determine her tolerance and to make sure that no harm is resulting from the use of the thyroid. The principal criterion should be the condition of the heart. If the heart rate is not accelerated, one may feel assured that no hyperthyroidism exists. For prolonged administration 1 or 2 grains a day is often sufficient. Pituitary extract has also been employed in the treatment of uterine hemorrhage. When the latter is due to atony of the uterine muscle, as in postpartum or post-abortion cases, the results are, as is well known, highly gratifying. This cannot be said of uterine hemorrhages of other types.

**Treatment of Peritonitis.**—Reporting experiments on dogs, D. D. DeNeen (*Amer. Jour. Surg.*, 1917, xxxi, 317) says that calcium sulphide has no value as an antiseptic and did not prevent adhesions



in these experiments. Ether has no value as an antiseptic in the prevention or treatment of local or general peritonitis. It will cause respiratory paralysis, when used in large quantities within the abdomen. It is irritating and will cause adhesions when used upon the normal peritoneum and aids rather than inhibits infection in the peritoneal cavity. Tincture of iodine and alcohol, equal parts, proved to be extremely irritating and harmful. Tincture of iodine will cause adhesions when applied to the peritoneum. Tincture of iodine and water did not prevent peritonitis. Drainage is preferable to calcium sulphide, ether or iodine in the treatment of peritonitis.

**Cholecystectomy Without Drainage.**—A. M. Willis (*Jour. A. M. A.*, 1917, lxix, 1943) considers cholecystectomy for simple infections of the gall-bladder as a most successful operation, especially if this can be done without soiling the peritoneum by the contents of the gall-bladder, and closing without drainage. He describes the technic which he employs. Adhesions of organs which normally have a certain amount of mobility cause postoperative complaints, especially in the gall-bladder region, and he feels that any operation which will limit these is certainly a step in the right direction. His experience is based on 549 operations for cholelithiasis and cholecystitis with twelve deaths, or 2.2 per cent. In this series, 466 patients, or 86 per cent., had gall-stones in the bladder or duct; 82 patients, or 14 per cent., had no gall-stones, but showed various stages of cholecystitis. There were 398 cholecystostomies with seven deaths, or 1.7 per cent., and 107 cholecystectomies with one death, or 0.9 per cent. In 38 of the cholecystectomies, no drainage was employed. In this group one death occurred. There were 44 choledochotomies with four deaths, practically 9 per cent. There were 26 secondary operations; 21 followed the operation of cholecystostomy and 5 occurred after choledochotomy. Gall-stones were found in 12 of the secondary operations; 7 in the cholecystostomy and in all 5 of the choledochotomy group. The low mortality after cholecystectomy is ascribed to the fact that this operation, on the whole, was performed in the more favorable type of case.

**Treatment of Amenorrhea, Dysmenorrhea, Sterility and Endometritis by Silver Stem Pessary.**—J. A. Carstens (*Med. and Surg.*, 1917, i, 617) states that a silver stem pessary can be introduced and retained in the uterus for months and years without danger, as it is not only aseptic but also antiseptic. It will generally restore menstruation in obscure cases when all other remedies fail. It relieves nearly every case of dysmenorrhea due to abnormal conditions of the womb. If worn for six months to a year, it will cure many cases of sterility. A careful diagnosis must be made of all pelvic troubles. Diseases of the tubes, ovaries, adhesions must be rigidly excluded.

**Treatment of Carcinoma of the Cervix with Radium.**—E. H. Risley and G. A. Leland, Jr. (*Bost. Med. and Surg. Jour.*, 1917, clxxvii, 891) report the results obtained in the treatment by radium of a series of 113 cases of carcinoma of the uterus at the Huntington Hospital from January, 1912, to June, 1916, inclusive.

In general the effects of the radium treatment are recorded as follows: temporary local benefit, 44 cases; much improved, 5 cases; entire relief from pain, 5 cases; some relief of pain in all but a few complaining of this symptom; complete relief from bleeding, 14 cases; healing of ulceration, 11 cases; decrease in the size of the growth, 8 cases; no improvement at all in 13 cases; increase in the growth (some rapid) in 30 cases; fistula (vesicovaginal) developed in 2 cases; mass made more movable in 8 cases. There were 2 deaths from disease other than carcinoma—1 from pneumonia and 1 from pelvic abscess. The results remain unknown in 7 cases. The total mortality dated Feb. 1, 1917, is 62 cases. Much symptomatic relief can be expected from radium treatment, especially in the checking of hemorrhage and alleviation of pain. Prophylactic radiation immediately following hysterectomy is a logical, safe and advisable procedure and should reduce the number of recurrences. The treatment of early recurrences offers a fair prognosis. Late treatment offers little but alleviation of symptoms and but little retardation of growth. Inoperable cases are benefited by radium and the period of life is somewhat prolonged.

**External Rupture of a Pelvic Hematoma During Instrumental Delivery.**—T. H. Cherry (*Surg., Gyn. & Obst.*, 1917, xxv, 674) reports what is apparently the first case in the literature of hematoma complicating the second stage of labor. As forcible traction with the forceps was made and with the advance of the head the hematoma was forced downward, through the cellular tissue covering the pelvic floor, and reaching the pubic ramus it was deflected laterally until arrested by the fetal head and then toward the median line and there arrested by the anterior ligaments of the bladder. The fascia over the levator ani prevented it from going posteriorly, so the advancing head pressed it down and it ruptured externally through the inferior triangular ligament under the descending ramus of the pubis.

#### GYNECOLOGY AND ABDOMINAL SURGERY.

**Vagitus Uterinus.**—De Gaudino (*Revista Argentina de Obstetricia y Gynecologia*, 1917, i, 394) refers to Bucura's paper which comprises an account of fifty cases of vagitus uterinus between 1800 and 1904. Three cases on record are not included in this summary and the author adds another seen in 1912. The cry was heard at least twice, once when the accoucheur's hand was in the vagina after the membranes had been ruptured and again as the forceps was being applied. After extraction, the child, a male, was seen to be alive and perfectly developed. It at once began to cry in a normal fashion. In over half of the recorded cases some form of extraction was required and in about two-thirds of the cases, there was normal respiration at birth, five were born asphyxiated, one was stillborn and in the remaining ten (Bucura's series) no statement was made.

**Clinical and Medico-legal Value of an Undescribed Sign of Recent Pregnancy.**—A. Turenne and C. Colistro (Montevideo), describe this sign in the *Archives mensuelles d'obstetrique ci de*

*gynecologie*, v. Nos. 10-12 (although published in January, 1917, this number has only recently been received at the Academy of Medicine E. P.). In 1902 Turenne was consulted in regard to a supposed suppression of birth. The uterus was as large as the fist in anteversoflexion. Everything suggested a recent gestation of two or three months. Hegar's sign was characteristic. Apparently the woman's testimony of an abortion could not be controverted. A midwife, however, gave private evidence that she had delivered the woman eleven days before of a living but premature fetus which was admitted in the Orphan Asylum. The author, therefore, examined twenty women from seven to thirteen days after the puerperium and in eighteen of these found Hegar's sign of pregnancy. The phenomenon is readily explained by the regular reappearance of this sign as the uterus undergoes involution. It should vanish about the twentieth postpuerperal day.

**Pregnancy and Tuberculosis.**—Forssner publishes some recent Swedish statistics on this subject which are reviewed in the *Finska Läkaresällskapets Handlingar* for July, 1917. The number of cases of pregnancy in the first stage of tuberculosis was 243, of which number 154 were under observation at least three years, of the gross total 196 were examples of stationary and 18 of advancing tuberculosis while 29 are dead. The total number of gravidæ in the second stage of tuberculosis was 151, of which number 102 were followed up for at least two years. Of this series 85 patients had the disease in the stationary and 7 in the progressive stage—while 59 women are dead. The total number of gravidæ in the third stage of the disease is given in one table as 22, in 9 of whom the disease was stationary. The others in this series are all dead. In another table 82 of the author's cases are contrasted with 100 from Krönig's clinic in Germany. Two sets of figures are given, for the stationary and improving cases on the one hand and the progressive and fatal cases on the other; from whence it appears that the condition of the Swedish gravidæ was somewhat more favorable than the Germans (77 per cent. stationary as against 69 per cent.). At the same time there were many more Swedish gravidæ in the second and third stages. In other words while 43 Swedish women out of 82 were in the two later stages chronologically, their disease was stationary in 29. Only 27 German women were in the two later stages and in but 7 of these was the disease stationary.

**Intense Vulvovaginal Pruritus Treated by Resection of the Perineal Nerve.**—Mauclair (Annales de gynécologie et d'obstétrique, 1917, xlii, 655) relates the case of a woman aged thirty-four who began to complain of pruritus after an operation which consisted of appendectomy, resection of left ovary and suspension of the uterus by passing the round ligaments through the recti muscles. Five months later the operation having proved unsuccessful, a second intervention was done and the right ovary resected. Suspension had not been accomplished. The pruritus became aggravated and intolerable, refractory to all treatment. One year after the last operation the patient's condition was such that the author resected the perineal



nerves. On the right the clitoridian branch was alone removed, as the author feared loss of function of the sphincter ani. On the left side the inferior branch of the perineal was resected to the extent of 3 to 4 cm. The woman has now been practically well for six months. There is slight itching but she does not have to scratch herself. The vulva is still red, probably because of a persistent vaginal discharge. There is hyperesthesia, more pronounced to the right, on which side the superior perineal was resected.

**Wertheim's Operation in Cancer of the Uterus.** Werneck (*Revista de gynecologia e d'obstetricia do Rio de Janeiro*, November-December, 1915) reports a series of twenty-one cases of cancer of the collum uteri operated on by Wertheim's method. Three patients died as a result of intervention, a primary mortality of 14.29 per cent. In four cases there was suppuration in the abdominal wall and two deaths occurred from necrosis of the ureter. Data covering remote results are very defective because of the difficulty in following up the cases. Nevertheless the author has several patients who have passed the four-year limit and whose condition is so satisfactory that they should be able to qualify as five-year cures. (Apparently there have been no known cases of recurrence.—Ed.)

**Vagotonia in Pregnancy (Experimental Study).**—Dr. Perevia de Camargo (*Revista de gynecologia e d'obstetricia* for 1916) of the Maternity Hospital at Rio contributes an extended article on this subject. In his tests he has used a modified Biedl technic. The drugs employed comprise adrenalin, atropine, pilocarpine, nitrites and ergotoxin. The author's conclusions are in part as follows. If Aschner's phenomenon is a true criterion of the existence of vagotonia then the latter condition is very common in gestation. In 200 gravidæ tested oculo-cardiac reflex was positive in 166. More accurately stated there were 80 double plus and 86 single plus reactions, and 3 double minus and 31 single minus reactions. In a double plus the lowering of the pulse rate must be at least 6 beats; single plus less than 6 beats. In a negative reaction the pulse must either remain unchanged or be elevated—if augmented by more than 6 beats it is a double negative. The blood pressure during Aschner's test was measured in 100 gravidæ, and the maximum pressure was found increased in 89 per cent. minimum pressure in 59 per cent. The pharmaceutical tests show the existence of vagosympathetic instability in pregnancy. An injection of 1 mgm. of adrenalin gave a positive reaction in 89 per cent. Two days later the same gravidæ received injections of 1 cgm. of pilocarpine with 95 per cent. of positive reactions. These figures show that vagotonus is somewhat more in evidence than sympathicotonus, which view is borne out by results of the glucose test. The principal find is the general instability of the vagosympathetic system which doubtless in part determines the general instability of pregnancy.

**Enterostomy and Use of Omentum in Prevention and Healing of Fistula.**—C. H. Mayo (*Annals Surg.*, 1917, lxvi, 568) describes the following technic. In the large majority of cases the intestinal obstruction for which the operation of enterostomy is indicated



occurs during the first few days following an abdominal operation. In early operation reopening of the incision is preferable. In late operation a second incision is occasionally advisable. A low-lying loop of distended bowel is elevated into the incision. A segment is freed of gases or fluids and controlled by rubber-covered forceps applied above and below the point selected for perforation. At a point opposite the mesentery a purse-string suture of silk is applied in a diameter of half an inch. The bowel is perforated in the center of the purse-string by a knife, or the perforation may be made with the Paquelin or an electric cautery. A catheter, size 10 or 12, is inserted several inches into the intestine and held in place, after the purse-string is tied, by perforating its side with the same needle and tying it into place. This suture will hold for a few days only. It will then cut out of the tissues and may be removed with the catheter when the latter is withdrawn. Two successive purse-string sutures may be applied, but the procedure most satisfactory is that of Witzel, *i.e.*, depressing the catheter into the wall of the bowel and suturing together the folds thus formed over the catheter for a space of an inch and a quarter. When the operation is made as a jejunostomy for feeding or for intestinal obstruction in children the Coffey method of incising the peritoneal and muscular layers of the bowel at the point of depressing the catheter into its wall conserves the lumen of the gut, the tube being placed between the mucosa and the wall of the intestine, and the peritoneum and muscle being approximated over the catheter. This method is rarely followed by a fistula. For additional security and also to favor closure of the opening, pass the catheter through the perforated omentum and then for fixation include the parietal peritoneum, the omentum and the intestine in three sutures.

**Preservation of Arm Function after Operations for Carcinoma of the Breast.**—W. T. Coughlin (*Jour. Mo. State Med. Assn.*, 1917, xiv, 475) holds that there is no need for impairment of function in the arm after operation for cancer of the breast. Inability to abduct the arm arises: (1) from an improperly planned incision, so that when healing has taken place a bridge of tight skin or a scar passes from chest wall to upper end of arm; (2) from having the arm dressed too close to the chest wall during healing, so that the raw surface on what was the outer wall of the axilla heals to the raw surface on what was the inner side. The incisions should be so planned that the scar never runs across the vessels and nerves at any distance below the clavicle. This will mean that the axilla must be entirely obliterated. Stiffness of the shoulder is a false ankylosis due to a shortening of the latissimus dorsi and teres muscles and to changes in the capsule of the joint when the arm is dressed at the side and kept immobilized during healing. The remedy is prophylactic. Dress with the arm in abduction. Edema is mainly due to the fact that the axillary lymph channels have been removed. To prevent the edema, elevate the part from the beginning and employ massage in order to hasten the reestablishment of lymph circulation and forestall dilatation of the lymph spaces below with development of solid edema.

# DEPARTMENT OF PEDIATRICS.

## TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

### SECTION ON PEDIATRICS.

*Stated Meeting, Held February 21, 1918.*

*The Vice-president, DR. GEORGE DAVID STEWART, in the Chair.*

DR. GEORGE E. VINCENT of the Rockefeller Foundation spoke as follows in an address on

### INTERNATIONALISM AND PUBLIC HEALTH.

I am not a pediatrician and lay claim to no special knowledge of pediatrics. I may, however, as a layman speak on a topic of profound interest in connection with the war, namely the problem of child welfare not only as it relates to young infants but also as it relates to children of school age. The war situation has not yet made such an impression on the children of America as it has upon those of Belgium and other European nations. In order that we may avoid such serious injury to our children it is imperative to learn from what we have seen in Europe and to combat anything that impairs the vigor and vitality of our children, for whatever threatens the welfare of children strikes at the basis of national welfare, and this is true not only during the war but in times of peace.

I wish to speak more particularly of "Internationalism in Public Health." We know, in this country, so little as yet about war that perhaps we may be justified in wondering what is going to happen after the war. The information I have to convey is of a highly speculative nature in regard to what may happen. I suppose that after the war the world will be patched together again just as it has been after wars in the past. I recently read some remarks of Louis Pasteur, spoken at the time of the Franco-Prussian War. He said, in effect, that after that war no Frenchman could again associate with a German and maintain his self-respect and no self-regarding German would ever again come to France. Yet before 1914, something like the thing that he said never could happen had come to pass. A German diplomatist at that time said that it was a source of great regret to him that it would be twenty years before he could go to Paris again, thirty years before he could go to London and forty years before he could go to Vienna. Yet something like amicable social relations were resumed before the lapse of many years and it is altogether probable that something like international relationships

will again be established between the warring nations of the present time. One can imagine that the time may come when a degree of sociability may be entertained even for a chastened German. One may also conceive of a situation in which the relations of the allied nations will not be altogether satisfactory as they are to-day and that there may be some recriminations and questioning of motives. There will probably be a perfect orgy of explanations and justification of motives after the war is over. The most useful international gatherings will not be those dealing with politics, morals or religion. It will be on the basis of scientific interest that the world may begin to be patched up again.

I wish to tell you of something in which I am interested. If you go to the Philippines you will find a hospital ship in service in the Sulu Archipelago. After having conquered these islands with machine guns, some doctor suggested setting up a dispensary. This was done and the people came to it, attracted first by curiosity. The doctors effected many cures and the people began to recognize the worth of the dispensary. The doctor then brought with him his friend, the school-master. After a time the dispensary developed into a floating hospital with a well-equipped operating room. This hospital ship covers a circuit of some fifteen stations in the various islands of the Sulu Archipelago. There is also a base hospital to which patients may be carried by this hospital ship. The ship is in charge of an American doctor and American nurses with a Philippine doctor and Philippine nurses as understudies. Such a plan of subduing and protecting a backward people may be found useful elsewhere, and it may prove more effective than machine guns until such a people are pacified and have developed to the point of being able to control themselves.

If one goes into the Southern States he will find that there are 600 people engaged in the problem of the control of hookworm disease. This is a perfectly understood disease and therefore something worth while clinging to as an illustration of what public health work means and can accomplish, because in this disease one can get such definite and demonstrable results. The work was not undertaken on a large scale until its worth was recognized by the Government, and the Government asked that the work be done and made an appropriation. When the Government has demonstrated the value of this work in a community it withdraws and leaves the work to be carried on by a local health organization.

There have been modern sanitary codes, drawn up by the International Health Board of the Rockefeller Foundation, adopted during the last year in Celon and Guatamala and in the latter country there have been 20,000 sanitary latrines built within the past year. I am telling you these things in order that you may see that public health activities play a definite part in the progress of civilization. It means a great deal to have 600 men helping to establish sanitary organizations who go out from this country as ambassadors of friendliness and beneficence to mankind. While this is not a spectacular method of advancing civilization there is no doubt that it plays an



important part in building up the structure of internationalism, and may be depended upon to bring the old world together again.

In Chicago some years ago several professors thought it would be a good idea to see what could be done toward introducing occidentalism into the orient. The most practical way of determining upon a method of attacking the problem seemed to be to send a couple of professors to study conditions in China. For this purpose a professor of geology, with his planetary theories, and a professor of theology, not a modern theologian from an Eastern center of learning, but a plain Middle West theologian, were chosen. We all know how difficult it is to get a unanimous report on any subject and it is certainly most unusual that a geologist and a theologian should agree, yet these two men made a unanimous report after their investigation, in which they stated that if occidentalism were to meet and fuse with orientalism it would not be on a basis of politics, philosophy, or religion, but that a basis for such a union might be found in modern science. This did not appeal to sentiment as a warm, human and throbbing plane, so a committee was appointed to go to China and study the matter still further. They submitted a report expressing the opinion that the best thing to do was to establish scientific relations with the East, and especially scientific relations as related to human welfare. As a result of these investigations two medical colleges were planned for China. The cornerstone of the first was laid in Pekin last September by Col. Frank Billings of Chicago. The building is now rapidly going up and represents all that is modern in equipment for the most exact scientific work. The laboratory will be perfectly equipped and the clinical side thoroughly unified with the laboratory side of the work. But the architecture of the buildings will be Chinese. Instead of an arrogant, intrusive, occidental institution, the exterior will be perfectly merged into the beauty of the Chinese city and will represent nothing aggressive or interpolating from without, but inside it represents all that is signified by modern medical science.

The medical college at Shanghai will not be built until after the war. The standards of these medical schools will be the minimum standard of the American Medical Association. Students to enter these colleges must be educated in the College of China in Pekin which is the premedical course required, and there one may get as good premedical course as anywhere in the world. In the central part of China existing educational institutions have been subsidized and grants given to enable them to provide the standard premedical education. These are to form the tributaries of the new medical colleges. The hospitals now established in China will be standardized so that internships may be provided for the graduates of the medical colleges.

Now let us suppose that this system is extended. Suppose it were deemed wise by Great Britain to establish in Calcutta such a medical system as America has laid the foundation for in China; suppose that the system were extended to Cairo and even that events should so shape themselves that it could be extended to Constantinople. A



world system might thus be developed. A professor with a message for the medical world could then be detached from one system and sent to Peking, Shanghai, Calcutta, Cairo, and Constantinople, and the medical men coming to these centers would come into contact with him. There would thus be formed a system by which modern medical knowledge could be quickly placed at the service of the whole world. I do not know that this will ever happen, but I know that one medical college is under way and another is promised, and who knows what the future may hold in store?

It is likewise possible that we should have an interchange of medical students. We now have studying in this country fifty-seven medical students from various countries. Medical missionaries are given only one year in seven in which they may come home to study, but if this system of medical centers were completed a plan could be devised whereby they could study for a time every year. The completion of such a system of medical centers would mean the standardizing of hospitals and medical schools throughout the world.

There is a Franco-American Committee now in existence which plans for the exchange of scholarships, so there is at least a beginning of an international system of student migration as well as a beginning of the exchange of professors.

The South Americans are very enthusiastic on the subject of modern medicine and have established a department of public health in one of their universities. Dr. Darling has gone to take charge of the department while two Brazilians have been sent to this country to study modern medicine and public health for five years, when they will return and release Dr. Darling. This is an interesting idea and represents coöperation between Brazil and the United States. Under a well-developed exchange system a cablegram sent to a medical center, say for a pathologist, would be met by an immediate response. The pathologist would be sent where he was needed and at the same time some one would be sent to be trained to take his place later on and to release him. Certainly the operation of such a system would have a direct bearing on international relationships. There is nothing in modern times more creditable than the fact that the initiative in preventive medicine has been taken by the members of the medical profession. There are, of course, some people who cannot understand this altruism and who deny it because they cannot conceive of men doing a thing whereby they are cutting off their own livelihood. We cannot expect that our work in this direction will meet with a just appreciation; we must derive our satisfaction from a consciousness of our own rectitude and a sense of duty well performed.

There has been nowhere a really successful system of devoting full time to public health work. In only a few places have solid achievements been attained in the training of public health officers. Harvard, the University of Pennsylvania and the University of Michigan offer course in public health work which have developed in response to the demand for such courses. They still leave much to be desired. A school has been established in connection with Johns

Hopkins University and will be opened next September which will afford a complete training for public health work. Dr. William H. Welch has become director of this institution. There will be a department for training in vital statistics and one for public health administration. The work is going to be done, not only in the laboratory and the lecture-room, but in the field. Health surveys are going to be made in a section of Baltimore in accordance with modern methods. It is not going to be difficult to gain admission to this institution, neither will it be easy to obtain a degree. The school is to be entirely distinct from Johns Hopkins, with a separate staff of instructors and its own curriculum and professional spirit. I believe it is the first institution of its kind to be established in the world. That carrying on a work of this kind will have an influence on internationalism is obvious.

I wish to speak for a moment of the tuberculosis work in France. In 1915 and 1916, it was found that the situation as regards tuberculosis was serious in France and Dr. Hermann Biggs was sent to study and to suggest the means of dealing with it. He found conditions serious and advised the training of doctors and nurses to carry on a campaign in France similar to that which had been successful in this country. Dr. Livingston Farrand secured a leave of absence and with a staff of assistants went to France to assist in solving the problem. He did not herald his coming with highly colored newspaper articles stating that he had now arrived in France, knew how to handle the situation, and could assure them that all would go well. It must be remembered that it takes a high degree of spirituality to be continually exposed to charity and to accept the situation gracefully. One French woman expressed this feeling in regard to charity by saying that the people of France were exposed to two enemies, the Germans and their charitable friends, the Americans. Dr. Farrand performed his work quietly and unobtrusively and in the closest coöperation with the public spirited people of France. He assisted in organizing an arondissement in Paris and in organizing one of the departments, and in this way demonstrated the method of successfully managing a campaign against tuberculosis in both a city and a rural community. The posters and circulars were just beginning to come out. They were the work of French artists and were whimsical and humorous; they did not strike one immediately as being designed primarily to be "improving." They spoke with eminently good common sense and cheerfulness and could not fail to make an appeal. Motor cars with a traveling exhibit and their own motion picture plant had been placed in operation. Seventy nurses were being trained to go into this work. The method of coöperation between the American Red Cross and the French organizations, serves as an illustration of international coöperation and yet it represents but one agency.

There is a surgical research council which is closely affiliated with our National Research Council. It sets up groups of research workers in London, Paris and Washington, and there is provision made by the governments for constant communication between these groups; they form in reality a syndicate. This means a recognition

of the community of interests in science. This is the spirit that is valuable and will bring the world together again. I am convinced that the work done by medical men for the public health and in research, in the exchange of professors, in the migration of students, and in science as applied to human welfare, a work which recognizes the community of mankind and lays emphasis on the things that men have in common.

Science that seeks the truth and applies it to the welfare of mankind, will knit the old world together again. While I do not paint a picture of the millenium as about to arrive, I believe we are actually drawing together and that while the things we are accomplishing in public health work are not spectacular, by quiet persistence and mutual good will we may be able to create an understanding among the different peoples, and that nothing will be more effective in reconstructing the world than preventive medicine and the application of its truths to the welfare of mankind.

DR. GEORGE D. STEWART.—I think we are all grateful to Dr. Vincent for having presented this broad view of the drawing together of different peoples when most of us are accustomed in our daily work to have our vision limited and concentrated on a very narrow field. All America is being unified under the forces at work at the present time. Every man between twenty-one and thirty-one is having a physical examination and ought to get a clean bill of health and all doctors are getting an additional medical education. The war is giving us a big nationality to fit a great nation and it is to be hoped that we will have, not necessarily a universal military service, but universal service for our country and our fellow men.

DR. ESTHER LOVEJOY spoke on

CHILD WELFARE WORK IN FRANCE BY THE AMERICAN RED CROSS.

I was interested in what was said about first conquering the Philippines by machine guns and I cannot help wondering why we did not employ the dispensary first before we used the machine guns. In regard to the Americans doing relief work in France I believe the general feeling is not that of the woman who said that France was being invaded by two enemies, but that, on the other hand, there is a feeling of confidence and joy that the Americans are there. The French may read that America is helping them but the visible evidence in the shape of an American uniform or even an American in citizen's clothing serves as an inspiration to the French people. I heard Dr. Farrand speak and, though he spoke for only a few minutes, he spoke in French and the people were greatly interested in what he had to say; they are much interested in anything that is American. It is said that Americans are a rude people and lacking in surface polish, but if you look beneath the surface you will find that at heart they have the "real thing."

Moving pictures were shown to demonstrate the relief work done by the Red Cross at Evian and Toul. "All the people sent back from the occupied territory of France and Belgium are either old people, children from two to fourteen years of age, or women having more than one child. A woman with only one child may still be able to do considerable work, so such women are kept because they



may be useful to the Germans. Of those sent back, 40 or 50 per cent. are children under fourteen years of age. Few of these are under two years of age because most children of that age are fathered by Germans and are kept in Germany. The children that are sent back are mostly undersize and undernourished. If you see a fairly well-nourished child it does not do to conclude that he is normal for in all probability you will find that he is two or three years older than he looks. These people coming back to France are brought by a three days' journey around through Switzerland to Evian. Three hundred or three hundred and fifty thousand refugees have been sent through in this way since the beginning of the war. Evian is a town of only 5000 inhabitants to which these convoys bring about 300 people daily so that they have to be evacuated very rapidly or great congestion will result. One amazing thing is to see how the spirit of the boys has been kept alive during this time. The younger children, however, who cannot remember anything of what life was like before the war are apathetic, apprehensive and fearful. From November 5, 1917 to January 1, 1918, 13,000 children passed through Evian. There is at Evian an isolation hospital maintained for the purpose of preventing the introduction of contagious diseases into France. A delousing plant is also operated by the Red Cross which cares for 200 persons at the same time. The children that are brought back have been unwashed for months in many instances and skin diseases are very common. In the occupied territory little children are compelled to wear gas masks and if you will examine the one I am exhibiting you can see that no greater cruelty can be imagined that compelling a little child to wear such a contrivance. The biggest work that the Red Cross is doing is backing the French societies in the work they are undertaking in France to-day.

## BRIEF OF CURRENT LITERATURE.

### DISEASES OF CHILDREN.

**Unresolved Pneumonias.**—Tuberculosis, says J. H. Hess (*Arch. Pediat.*, 1917, xxxiv, 686) is frequently a complicating, if not primary factor in many of the fatal cases and unquestionably frequently a factor in delayed resolution in recovered cases. Empyema especially of the interlobular type must be excluded in all cases. Empyema and tuberculosis are the two complications to be most carefully watched for and treated, the former surgically, the latter symptomatically. The rare etiologic factors, such as syphilis, foreign body, metastatic and primary newgrowths, while uncommon, must not be overlooked. The diagnosis of nontuberculous interstitial pneumonia should always be made with great caution and after exclusion of all other conditions causing similar physical findings.

**Osteochondritis Juvenilis of the Hip.**—W. Blanchard (*Jour. A. M. A.*, 1917, lxi, 1060) says that osteochondritis deformans juvenilis seems to be a nutritional disease of the bones and muscles



of the hip and leg. The femoral head that continues in functional use during the acute stage of the disease becomes obliterated wholly or in part by the attrition of weight-bearing on softened bone. The head of the femur that is mechanically protected throughout the acute stage of the disease suffers only the same atrophic changes as the adjacent bones. In convalescence, the destroyed head redevelops rapidly under mechanical protection, and redevelops more slowly and less perfectly without protection. The disease progresses with one year of bone and muscle atrophy and lessened density followed by several years of increasing density and redevelopment. The bone hardening resembles the eburnation after rickets. From the foregoing facts it may be inferred that this disease of growing bone is of nutritional character, and is due to a blood circulation that is disturbed from a median pelvic line to the foot, and that the head and neck of the femur are only incidentally affected. The patient is usually from four to ten years of age, walks with a slight limp, and complains of occasional pain. There is always some atrophy of the thigh and less of the leg. Abduction is limited, but movements in all other directions are free. The radiogram will usually differentiate from tuberculosis of the hip-joint. With the hip-joint well protected, constant exercise in the open air and a liberal raw-food diet seem to be of greatest service in the treatment of Perthes' disease.

**Renal Function Tests in Children.**—L. W. Hill (*Amer. Jour. Dis. Child.*, 1917, xiv, 267) finds the added salt and urea test of little practical value in children. The determination of the blood urea is probably of slightly more value. The most valuable of the tests discussed are the phthalein test and the two-hour renal test, because they are simple to carry out and give reliable and important information concerning the functional power of the kidney. More valuable information can be obtained by using them together than by using either singly. They are of unquestionable value in prognosis of nephritis of early life, which is most difficult. In general, repeated *low* functional tests at intervals of a few months mean a poor prognosis. High phthalein excretion alone does not help us one way or the other. High phthalein excretion, normal blood urea, and a normal response to the two-hour test warrant a conclusion that the process is a mild one, that the kidneys are only slightly damaged, and that there is a good chance for ultimate recovery.

**Hunger in the Infant.**—R. Taylor's (*Amer. Jour. Dis. Child.*, 1917, xiv, 233) studies are concerned particularly with the gastric factors in the urge for food. The major of these, the hunger contractions, was studied by means of apparatus similar to that used by Carlson. A rubber balloon of about 20 c.c. capacity attached to one end of a small soft rubber catheter is inserted into the stomach and inflated, the catheter is attached to a bromoform manometer with a cork float and a writing pennant which records the gastric movements on smoked paper. The study of 56 infants from birth to two years of age confirms the fact that hunger contractions are greater in the new-born infant, and shows still greater hunger contraction in the stomachs of prematurely born infants. There is no relation between

cyanosis and hunger contractions. Inhibition of the hunger contractions from the mouth does not occur in young infants. Inhibition of the hunger contractions from the mouth in older infants is present only as the result of stimuli, which the babe has learned to recognize as food. It does not occur with substances producing equally strong sensory impressions, but which are not considered by the infant as food. Inhibition from the mouth is psychic in character. Reflex inhibition from the presence of food in the stomach is present in infants of all ages. This reflex inhibition from the stomach may be only partially developed in young infants. Successive automatic sucking movements—each sucking act serving as the stimulus for its successor—are present during the hunger state, when the reflex threshold is kept almost constantly low by a rapid succession of hunger contractions. In normally developing breast-fed babes, hunger is not ordinarily an immediate cause of crying. The average time required for the development of hunger in healthy infants gaining in weight and receiving a known sufficient amount of food is, in prematures, under one month, one hour and forty minutes, with a maximum of two hours and twenty minutes and a minimum of forty minutes; in full-term infants under two weeks, two hours and fifty minutes, with a maximum of four hours and a minimum of two hours; in infants from two weeks to four months, three hours and forty minutes, with a maximum of four hours and thirty-five minutes and a minimum of three hours and twelve minutes. The time required for the development of hunger in any one infant is fairly constant over a short period of time provided the amount and kind of food is not changed. The time required for the development of hunger in infants with chronic nourishment disturbance is shorter than in normal infants. The time required for the development of hunger is shorter when the infant receives food which is poorly tolerated. Hunger contractions occur in these infants long before the stomach has emptied, consequently their presence is not in itself an indication that the stomach is ready for food. The feeble nursing exhibited by most prematures and by many older infants is not due to derangement of the primitive hunger apparatus. Hunger contractions are present and of normal intensity in such infants. Hunger contractions were present in one infant with congenital myxedema and in a two-year-old boy with typhoid fever when the rectal temperature ranged between 104.4° F. and 105° F.

**Hunger and Appetite Secretion of Gastric Juice in Infants' Stomachs.**—R. Taylor (*Amer. Jour. Dis. Child.*, 1917, xiv, 258) describes an apparatus by which sham feeding can be carried out and gastric juice collected under conditions which give positive evidence of the amount secreted. In order to avoid contaminating the gastric juice with saliva, and to permit the carrying out of sham feeding, he converted a No. 21 F. soft rubber catheter into an outer casing for the Rehfuß tube. When in place this outer casing terminates internally in the esophagus, and externally with a suction apparatus. The experimental procedure was as follows: If the babe fasted all night, he was given water at 5.00 A. M. in quantity equivalent to his usual feeding. When the stomach was examined a

few hours later, milk remains were never found. If the period without food were shorter, his stomach was thoroughly washed out and observations begun an hour later. If no aspiration is applied to the stomach tube during the half hour, the amount obtained is usually less than 1 c.c. The usual procedure was to insert the tube, exert suction to empty the stomach of any content, then allow the tube to remain one-half hour without suction, and collect the specimen, if any. Repeat the procedure, exerting gentle suction every two and one-half minutes and collect the specimen. Exert suction in the same way during a third half hour while the sham feeding progresses. To stimulate an appetite secretion, the babe was given a pacifier threaded over the tube, or, the food to which he was accustomed was administered by a medicine dropper, or, with the artificially fed babes, from their usual nursing bottle. These experiments showed that there is no appetite or psychic secretion of gastric juice in the young infant. This disproves the present view, which is based on insufficient experimental evidence. The empty stomach of the hungry babe secretes a gastric juice which often is as acid as that found in the adult's stomach. The more profuse this secretion, the higher is its acidity. It contains pepsin. This secretion is not neutralized in the stomach, but flows out into the small intestine. Regurgitation through the infant's pylorus does not occur. The theoretical objections to tube feeding in prematures because of the lack of stimulation of an appetite gastric juice are not valid. However, a disadvantage may lie in this; that such feeding precludes the usual admixture of the milk with saliva. Therapeutic starvation in acute alimentary disorders and in summer diarrheas may owe its success in part to the heightened tonus of the alimentary tract, and in part to the pouring out of highly acid detoxicating and disinfecting gastric juice into the small intestine.

**Epidemiology of Nursling Tuberculosis.**—Burckhardt (*Correspondenz-Blatt für Schweizer Aerzte*, 1918, xlviii, 31) gives an abstract of an article by Schloss in the *Berliner Klin. Wochenschrift*, 1917, No. 35, from which it appears that an epidemic of tuberculosis occurred in the nursling division of the Friedrich Orphan Asylum in Berlin which had all the force of an experiment. A nurse with open tuberculosis infected fourteen infants who remained for a long time under observation. Four are dead of the disease and a fifth of croup. During the incubation period there was no fever and after the tuberculin reaction became positive the children continued to develop normally. The fatal cases occurred in the only children who were weakly and all in all the prognosis of the disease in such cases is not necessarily bad. The diagnosis was made by the x-ray demonstration of enlarged bronchial glands (inhalation tuberculosis). The Pirquet reaction was not very trustworthy, far less so than the Mantoux intracutaneous test.

**On Diseases of Nutrition in Nurslings and Their Treatment with Albumin-milk.**—Nystén (*Finska Läkaresällskapets Handlingar*, August, 1917), has made use of Finkelstein's albumin-milk in the Children's Hospital at Helsingfors since 1910. During this interval he has employed it in 180 cases, as follows: dyspepsia, 72; decompositis,



32; alimentary intoxication, 42; disturbances of nutrition in connection with infection, 18; congenital debility, 10 and acute enterocolitis, 6. No case is included unless the milk was used for at least five consecutive days. The general result was favorable as shown by the relatively prompt change in the quality of the stool, the fall of temperature and pulse to normal and the improved general condition. In several cases good results were obtained after other dietetic plans of treatment had failed. An exception to the general rule obtained in the case of congenital debility, in which the results were less satisfactory. This is perhaps attributable to too high fat and protein content. For such cases, when deprived of breast milk, a fat-poor diet—for example, dilute buttermilk—should be superior to the albumin-milk.

**The Automobile in the Treatment of Whooping-cough.**—Challamel (*Bulletin général de thérapeutique*, 1917, clxix, 768) states that change of air is a very old, trustworthy remedy in pertussis. In a few weeks and at times even in a few days a most inveterate case may be radically cured through this resource. He has seen remarkable results after an automobile trip which fact suggests that not different air but rapid and prolonged æration is the curative element, the intrapulmonary pressure being increased thereby. Pertussis has a nervous component and is almost to be regarded as a neurosis; and it is perhaps this element which is favorably influenced. Whatever the mechanism a rapid automobile journey produces results akin to those of oxygen inhalation and the pneumatic chamber; and is far more natural, simple and accessible to the public. The vehicle should be uncovered, the face directed forward, the body well covered, and the pace rapid—at least one of 10 kilometers over a full hour, and more if desirable. Fever is a contraindication. Even a single ride has terminated a case.

**Foreign Body in the Larynx in a Child Aged Four Years. Extraction by Natural Passages Three Months After Its Introduction.**—Brindel (*Journal de Médecine de Bordeaux*, 1917, lxxxviii, 280) obtained no history of a swallowed body but the almost aphonic voice in a healthy child suggested this possibility. The patient had choked on a spoonful of soup and the most thorough examination could not discover any offending objects. The general health remained good but slight interference with breathing and occasional suffocative paroxysms with the aphonia kept alive the suspicion of a foreign body. When the author first saw the case two and one-half months had elapsed and the laryngoscope revealed nothing. After several attempts on successive occasions a foreign object became visible. An equal amount of patience was required for its extraction. It proved to be a flat piece of bone, so thin that it had escaped the x-ray. The thin edge had also simulated a pin in the mirror. The convalescent period was uneventful, for the tolerance to the presence of the object had been remarkable.

**Acute Hepatic Congestion of Nurslings.**—Raimondi (*La Presse Médicale*, 1917, xxxv, 660) describes at length a syndrome which would perhaps be included under one form of the exudative diathesis. There is an intolerance of fatty food, with febrile attacks. There is,



however, no implication of the gastroenteric tract. The victims are hearty feeders and seem well nourished. The author accuses a congestion of the liver in such cases as an impression of a congenital and inherited hepatic insufficiency. Upon a vegetarian, fat-poor diet the infants improve, although there is a marked tendency to relapse. The implication of the liver is shown by physical exploration—in fact notable increase of volume and temperature, which is often hyperthermic, are the two principal symptoms. In addition to dieting the author uses calomel freely, along with scammony and castor oil. Prophylaxis consists in restricted diet, with a minimum of fat and a calomel purge every month. The leading articles of diet are skim milk, butter milk and Vichy, artificially fermented milk (including kefir and yoghurt), legume, bouillon, infusion of powdered germ of wheat. Upon weaning, overeating must always be discouraged.

**Renal Lithiasis in Childhood.**—Professor Gurgal (*Brazil-Medico*, 1917, xxxi, 365) relates a case of two calculi in the left kidney pelvis of a six-year-old boy, the diagnosis having readily been established by the x-ray. There was a history of attacks of colic which persisted after the removal of intestinal worms by thymol. During these crises the child was unable to pass water. A diagnosis was made of gravel but urotropin gave no relief. Not until the crises had persisted for three years was a systematic and expert examination made. Gall-stone disease was excluded and an exclusion diagnosis of renal catharsis was made before verification by the x-ray. The stones were readily removed by pyelotomy and were found to consist of ammonio-magnesian phosphate and oxalate of lime. The striking absence of a reaction in the urinary apparatus and the absence of symptoms—aside from the crises—are characteristic of renal catharsis in small children. Hutinel has emphasized the remarkable tolerance of the very young to kidney stones.

**Autoserum Treatment of Chorea.**—The technic of this method as described by Goodman includes the exclusion of tuberculosis and syphilis, rest in bed for several days until all drugs are eliminated from the system, lumbar puncture with withdrawal of 15 to 20 c.c. of fluid, and intraspinal injection of 10 to 18 c.c. of the patient's own blood serum. This procedure has been employed by E. M. Tarr (*Northwest Med.*, 1917, xvi, 308) in fourteen cases. Of these eleven were cured, two improved and one unimproved. The greatest number of injections given to any patient was three. The amount of serum per dose ranged from 7 c.c. to 18 c.c. No rule can at present be set as to the exact amount of serum necessary to produce the desired effect. The youngest child in the series received 16 c.c. and the eldest (sixteen years) received the same dose. The former was well in forty-eight hours, while the latter was improved in four days and well in about two and a half months. After giving the serum the writer would place the patient in a quiet room, alone if possible; give no solid food for twelve to twenty-four hours to avoid nausea and vomiting; and exclude visitors for forty-eight hours. Acute cases can be cured before cardiac conditions develop. This is, in the writer's opinion, the strongest argument in favor of the treatment.

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## ORIGINAL COMMUNICATIONS.

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### A NEW OPERATION FOR URINARY INCONTINENCE IN WOMEN BY TRANSPOSING THE LEVATOR ANI MUSCLE.

BY

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(With seven illustrations.)

THE relief of urinary incontinence in women where the sphincter urethræ muscle has been destroyed by disease or the traumatisms of childbirth, is one of the most difficult problems in surgery. Various procedures have been recommended in the past. One of these consists of taking a series of purse-string sutures in that portion of the detrusor muscle nearest the urethral orifice to form a new sphincter. This will undoubtedly help to a certain degree in many cases, but where the injury has been of long standing and considerable atrophy has occurred, the results are usually unsatisfactory. In these cases an attempt to use the remnants of the trigonal fascia together with the formation of a new urethra from vaginal or labial tissue has been performed. A urethra constructed by this difficult, and usually only partially successful operation, acts oftentimes merely like the spout to a kettle without materially improving the retention of urine in the erect posture.

It was a case of this kind which had in the course of seven years been subjected to five operations by two of the ablest gynecological surgeons of the East that induced me to attempt a procedure which so far as I have read the literature here and abroad, has not been previously suggested and which met with such a considerable degree of success that I feel justified in recommending it to others for trial in similar cases.

The occasion for this new procedure was the necessity of finding some muscle tissue that could be utilized for the purposes of a new

sphincter urethræ. It occurred to me that with a somewhat relaxed pelvic floor the anterior bundles of the levator ani muscle could be utilized for this object by transposing this portion of the muscle beneath the anterior vaginal wall and attaching it under the urethral opening to the pubic ramus of the opposite side.

Following is the history of the case:

Mrs. B., thirty-seven years old, consulted me for the first time on October 1, 1913. Her trouble dated back to the delivery of her first child in 1907. Apparently it was a brow presentation and a very difficult high-forceps application resulted in a fracture of the child's jaw. In the extraction of the head, the denuded jawbone of the child ripped open the entire urethra to the bladder. The mother made a fairly good recovery. Six weeks later she was taken to a surgeon in Philadelphia who attempted to form a new urethra from a portion of the left labium minus. This and two further operations done in the course of the two following months were failures so that there was complete incontinence both night and day. In the following year the patient gave birth to a full-term child without complication. At this time there was a hole in the bladder large enough to insert the tip of the index-finger. In 1910 she was again operated on by a Baltimore surgeon. The opening in the bladder was greatly decreased in size by circular sutures enveloping the edges of the detrusor and a urethral plastic from the surrounding vaginal tissues supplemented this. Bladder drainage was secured through a vesico-vaginal incision. This operation resulted in a slight improvement in urinary control at night but during the day the incontinence was complete. The following year the same surgeon proceeded in the hope that a uterine suspension would relieve the pressure on the bladder and so diminish the incontinence. This operation, however, proved to be useless.

Two years later in 1913 she consulted me. I found a woman in good general physical condition with no marked abnormalities except the local condition. The constant dribbling of urine had caused pronounced chafing of the entire vulva and the inner aspect of both thighs. The vulva showed a defect in the left labium minus from a previous operation, a markedly relaxed pelvic floor, cystocele and rectocele, and an opening into the bladder about 1 cm. in diameter with a small fistulous tract to the left and below it. Two centimeters above this opening was a small pocket representing the former urethral opening. The uterus again lay retroverted, but only partially descended owing to peritoneal adhesions. Adnexa seemed normal.

Owing to external factors the patient could not come up for operation until Sept. 27, 1915. Conditions had not changed materially during the course of these two years. The operation done under ether anesthesia may be described in the following steps, corresponding to the illustrations:

*Step 1.*—A U-shaped incision was made surrounding the urethra and extending about 3 cm. above and below it. A semicircular incision was also made at the junction of perineum and vagina extending somewhat higher on the right side.

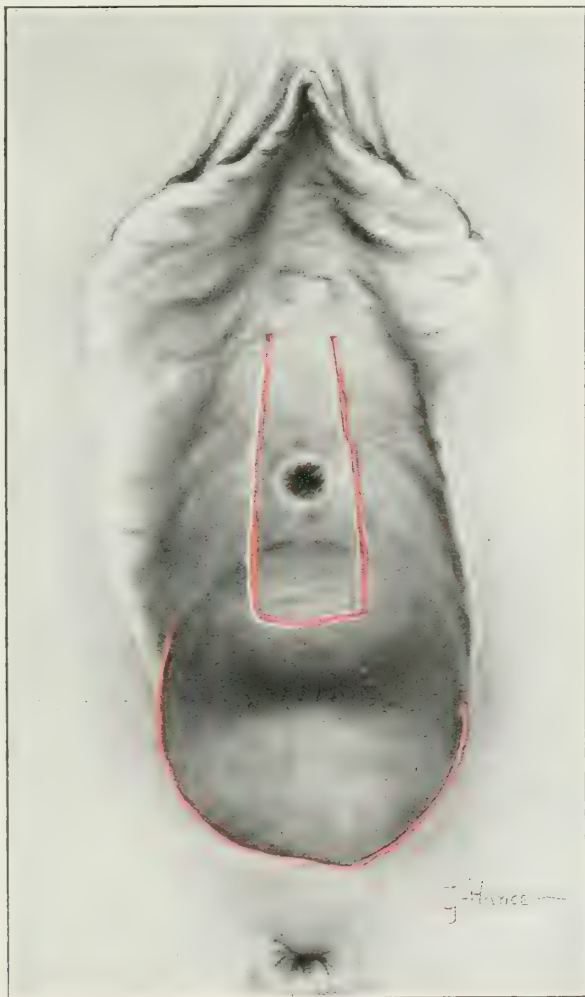


FIG. 1. *Step 1.*—Primary incisions. U-shaped incision around urethra. Pocket of old urethral opening above incision. Incision along perineum.

*Step 2.*—The vaginal mucosa below the urethra was dissected off to form a flap and the vagina dissected off for some distance to either side to lay bare the peri-urethral tissue. At the same



time the levator ani muscle was laid bare through the perineal incision. On the right side it was exposed along its entire length. Then grasping a bundle of muscle  $1\frac{1}{2}$  cm. in width, it was cut free from its rectal attachments and dissected loose from the main muscle

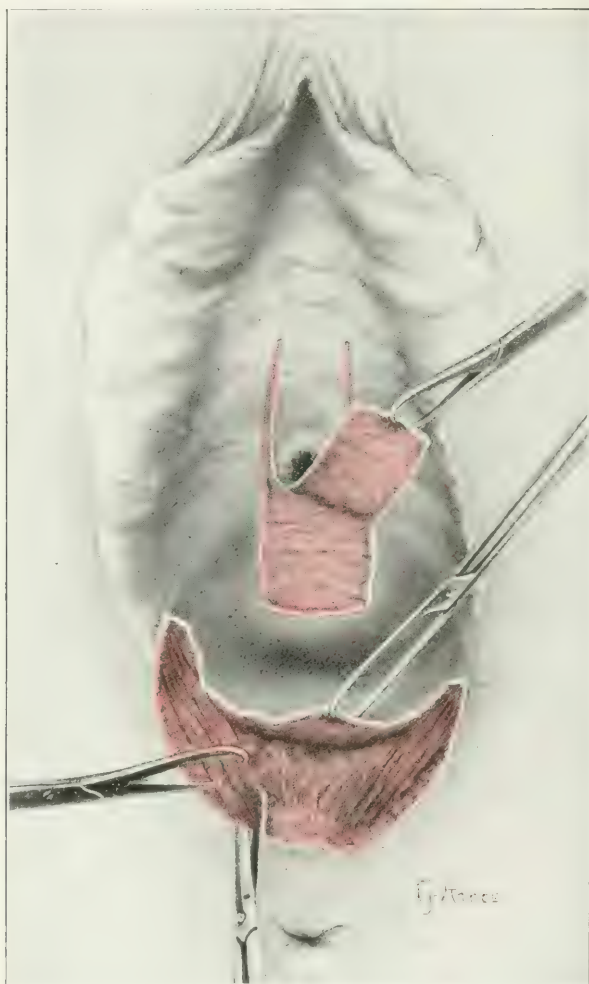


FIG. 2. *Step 2.*—Dissection of flap for new urethra. Cutting attachment to rectum of anterior bundle of levator muscle.

bundle so that a muscular flap about 6 to 7 cm. in length was formed, still attached to its insertion in the white line. This caused but little bleeding.

*Step 3.*—The vaginal wall between the urethral incision and the perineal incision on the right side was then tunneled loose and a curved forceps passed from the urethral incision through this tunnel

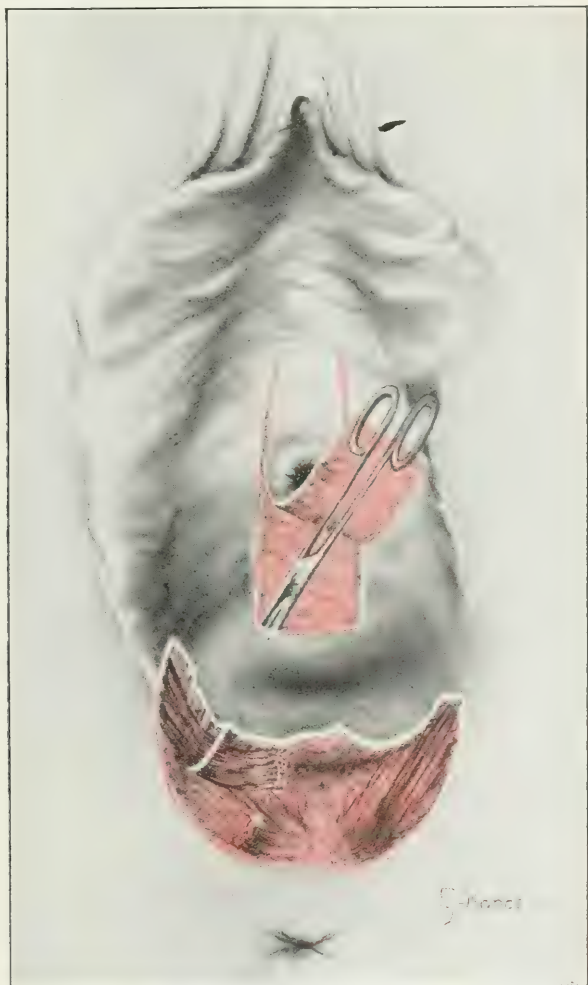


FIG. 3. *Step 3.*—Tenaculum forceps passed from urethral incision under vaginal wall to catch the loosened bundle of levator muscle and pull it through to the urethra.

to grasp the bundle of levator muscle fibers and pull it through to the urethra.

*Step 4.*—Three No. 1 thirty-day chronic catgut sutures attached

the ends of the transposed muscle to the remnants of the trigonal fascia on the left side and the edge of the muscle was similarly attached by a suture on the right side.

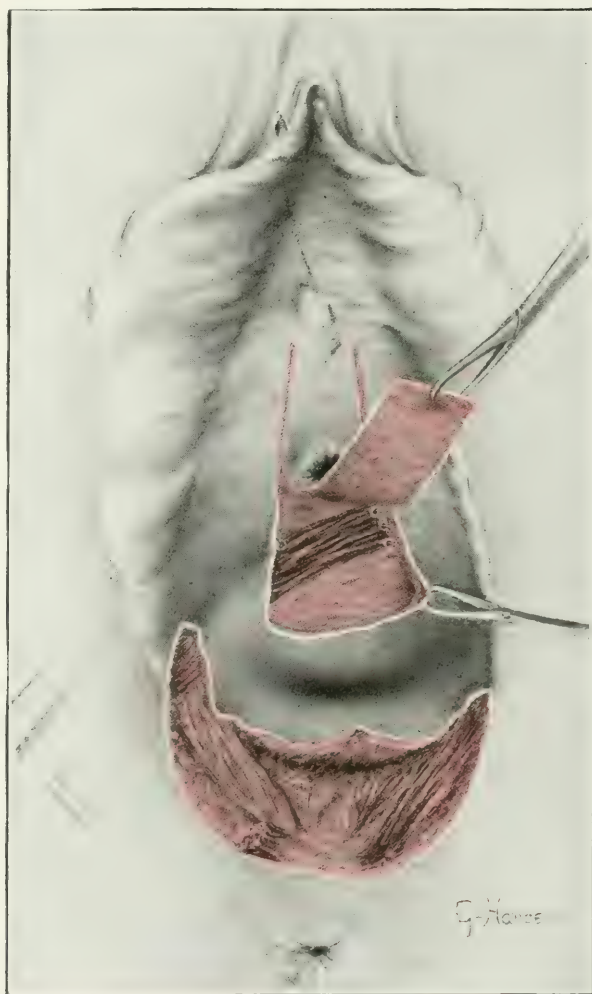


FIG. 4. *Step 4.*—Suturing the transposed muscle beneath the urethra to the left pubic fascia and to the tissues on the right side.

*Step 5.*—The vaginal flap below the urethra was sutured to the inner edge of the U-shaped incision forming a urethral canal 3 cm. long and the outer edges of the incision sutured over it to close the

wound area and cover the urethral canal. A small retention catheter was left in the urethra and fastened by a silk suture.

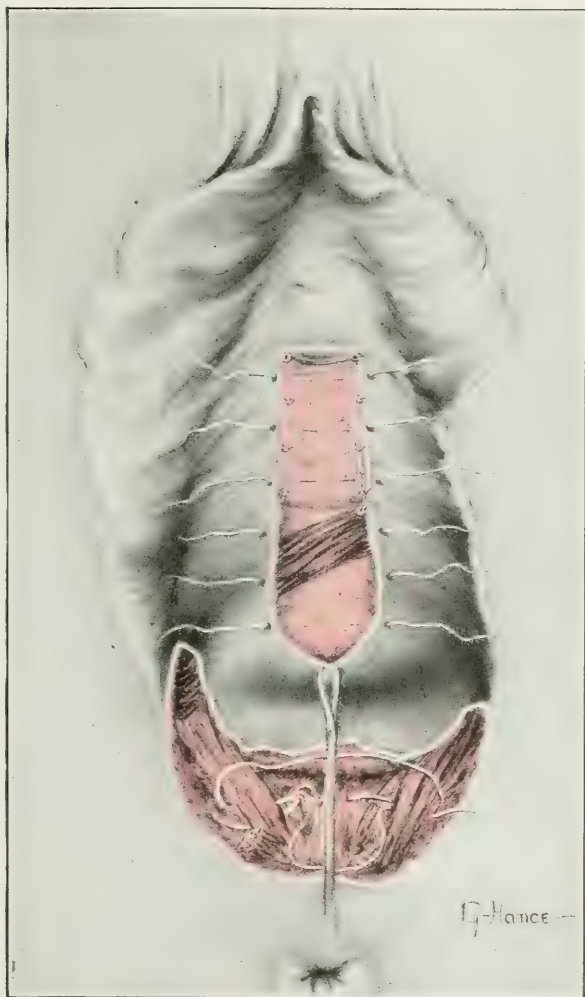


FIG. 5. *Steps 5 and 6.*—Vaginal flap has been fastened forward to form a new urethral canal. Sutures in place to cover this canal with the surrounding vaginal wall. Below can be seen the figure-of-eight suture to approximate the levator ani muscle on the left side to the remaining portion of the muscle on the right side.

*Step 6.*—The levator muscle on the left side which had been torn and was in consequence somewhat reduced in size was now sutured



to the remainder of the levator muscle on the right side and the perineal wound closed in layers in the usual manner with catgut sutures.

The postoperative course was complicated on the third day by a rise of temperature to 101.5° F. and general malaise. The temperature remaining high on the next day, the wound was inspected. In so doing some traction was exerted on the urethral sutures which probably interfered somewhat with primary union. The wound area, however, looked clean, so a careful blood examination was made. This showed numerous malarial plasmodia with a few crescents. Under anti-malarial treatment the fever subsided and the patient made a good recovery. When the retention catheter was removed on the eighth day the patient was able to hold all but a small portion of the urine in the recumbent posture. On getting up, however, the urinary control was less satisfactory, about 2 to 5 ounces being voided with a leakage of 1 or 2 ounces in the interval. Inspection of the wound one month after operation when the patient left for her home, showed that the perineoplastic had healed very well. About 1 cm. of the urethral canal had held and beneath this lay a firm muscle bundle the thickness of an index-finger.

On April 20, 1916, seven months later, the patient's husband, who is a physician, reported that she voided usually once at night with very little incontinence except just on getting up on the commode. She voided from 8 to 10 ounces at night and about 4 to 6 ounces at a time during the day. Not more than six napkins a day had to be changed. The condition was at least 50 per cent. better than before. An interesting observation was that if the patient was traveling on a train, the retention of urine was almost perfect and was associated as usual with constipation. On the other hand, if the patient was nervously exhausted, or having her menstrual period, the leakage of urine was more pronounced.

We tried various forms of pessary to exert pressure on the urethra but these failed to give relief. Finally a secondary operation was decided on. The patient returned to town and on Oct. 15, 1917, two years after my first transposition operation, the secondary plastic was performed. At this time the transposed levator bundle was still distinctly outlined and a contraction could be felt synchronous to the contraction of the main levator muscle. Retraction of the perineum pulling upon the muscle produced a partial leakage of urine. The second operation consisted essentially of three steps:

*Step 1.*—Large U-shaped incision extending 6 cm. above the urethra to the upper margin of the labia minora.

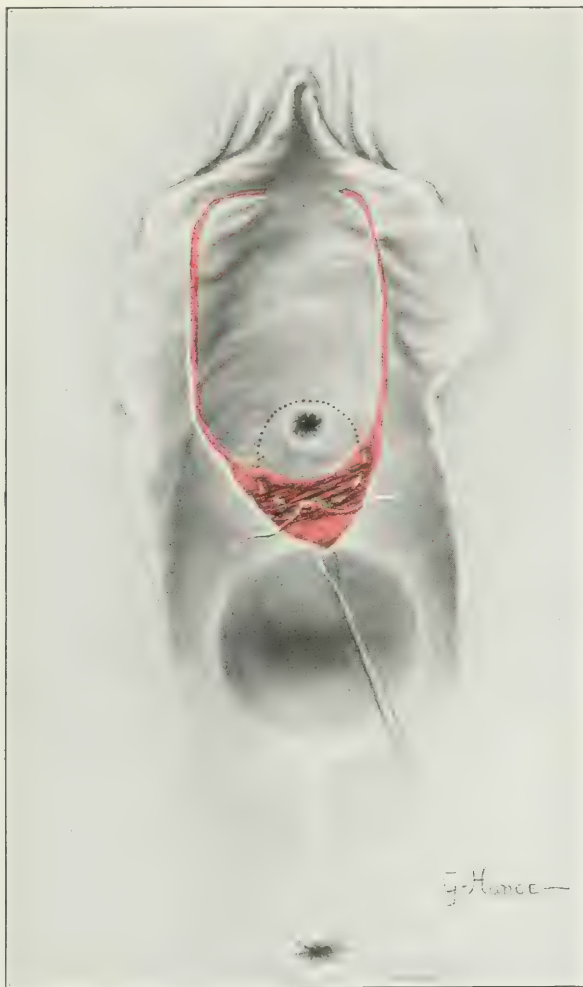


FIG. 6. *Second Operation. Steps 1 and 2.*—Large U-shaped incision outlining the flap for the new urethra. First purse-string suture passed around the urethra and beneath the mucosa emerging beneath to pick up the transposed muscle bundle and bring it in a crescentic form firmly around the urethra.

*Step 2.*—Exposure of the transposed muscle. Two purse-string sutures passed around the urethra picking up laterally the edges of the muscle and thus bringing the muscle up and around the

urethra in a crescentic form. These sutures were tied over a metal catheter fairly snugly. No. 2 forty-day chromic catgut was used for this purpose.

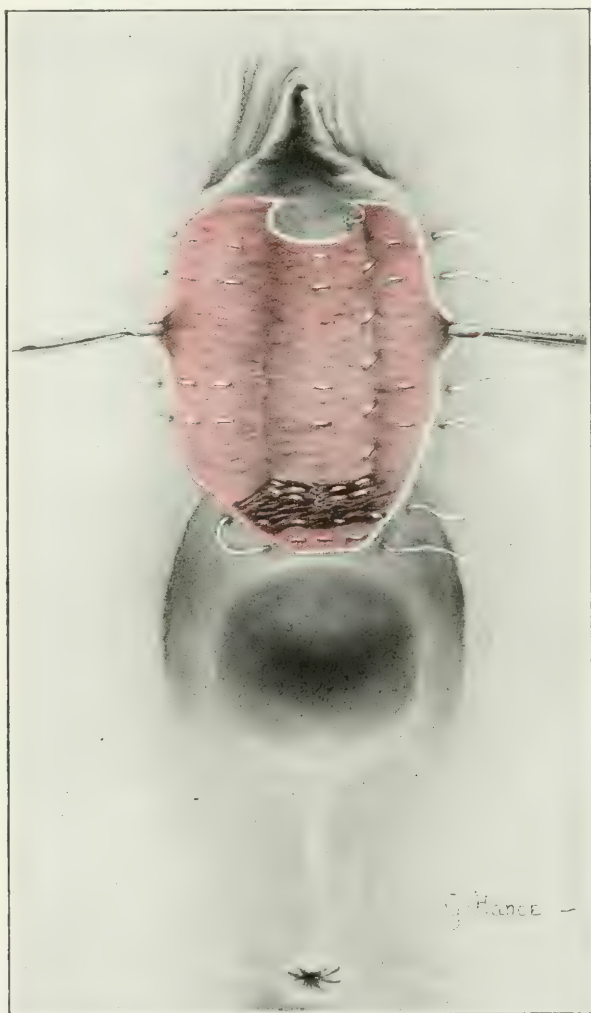


FIG. 7. *Second Operation. Step 3.*—Sutures encircling urethra have been tied. Inner canal of new urethra formed by labia minora closed by interrupted mattress sutures. Mattress sutures in place approximating the edges of the labia majora over the urethral canal.

*Step 3.*—A new urethra 6 cm. long was built up from the inner layers of the labia minora employing more of the tissue of the right

labium which was still intact. The remainder of the labia minora was trimmed off and the wound and new urethral canal covered up by drawing together with sutures the tissues at the junction of labia minora and majora.

An important feature of the urethral plastic was the employment throughout of a mattress suture bringing together raw surfaces instead of only the edges of the tissues. Again a retention catheter was fastened in place through the new urethra.

When the bladder was being tested at the conclusion of the operation by filling it with boric acid, a most unpleasant accident occurred. The boric solution was found to be coming in considerable quantity from the vagina. Inspection, made with some difficulty, showed that the old vesicovaginal drainage fistula made in the operation seven years previously in Baltimore not far from the cervix had again opened up under the tension of a full bladder. A lateral perineal incision, exposure of the fistula and two catgut sutures placed after denudation fortunately resulted in a closure of this fistula without further trouble.

The postoperative course this time was very satisfactory. Primary wound healing was obtained. The new urethra remained about 6 to 7 cm. in length with the new meatus just below the clitoris. Only a slight degree of incontinence on exertion or walking around was experienced. She now has perfect control at night and uses only about two cloths during the day when she is around a great deal. The anatomical result is almost perfect and it seems probable that with electrical stimulation to the new sphincter the functional result may also return entirely to the normal.

In conclusion I hope others may be induced by this success to employ the procedure in similar cases. I would suggest, however, that, if possible, a levator muscle flap be dissected off from both sides and brought together in the midline beneath the urethra, since thereby the muscle could in the first instance be made almost to surround the opening instead of merely exerting pressure against it.



TOTAL HYSTERECTOMY, PER VAGINAM, LAPPING OF  
THE ANTERIOR VAGINAL WALL FASCIA AND THE  
APPROXIMATION OF THE CARDINAL LIGA-  
MENTS, FOR THE CURE OF EXTREME  
PROCIDENTIA UTERI OF LONG  
STANDING.\*

BY

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(With three illustrations.)

THE selection of the vaginal route in the two cases here reported, was chiefly for the reason that it was the only route by which the prolapsed uteri could be removed and the vaginal walls at the same time restored to their normal position. Had it been possible to have determined, previous to operation, in the first case reported, that the changes in the corpus uteri were metastatic and that the seat of the primary focus of the malignancy was ovarian, I would have proceeded differently, namely: opened the abdomen, first removed the adnexa and all adjacent tissues, then the corpus with part of the hypertrophied and enormously elongated cervix, and in the course of four weeks or more performed a vaginal section for the removal of the remaining portion of the cervix and lapped the vaginal fascia as herein described.

The two cases reported were identical with respect to the size of the cervix, extent of protrusion through the vulva and eversion of the vaginal walls. The corpus uteri in one case filled the posterior culdesac and formed an acute angle with the cervix. In the other case, the corpus was situated well forward. In one case there was a metastatic malignancy of the corpus, in the other case a fibroid tumor on its anterior surface, and a fundal mucous polyp in its cavity. In one case there was a second degree laceration of the perineum; in the other case a third degree laceration. One case was sixty-two years old, and had suffered from "falling of the womb" for twenty years, but refused to have anything done surgically

\* Read at a meeting of the New York Obstetrical Society, February 12, 1918.

until the onset of the uterine hemorrhages. The other case was forty-two years old, and had suffered from "falling of the womb" for fifteen years, but being obliged to provide for herself and husband, she deferred surgical assistance until forced to seek relief, because of a sudden and profuse hemorrhage. The cause of hemorrhage in the first instance was determined to be a metastatic carcinoma of the corpus uteri, the result of a small adenocarcinoma of the right ovary. The cause of the hemorrhage in the second instance, was the fundal mucous polyp  $1\frac{1}{2}$  cm. in length and probably a fibroid tumor 4 cm. in diameter growing from the anterior wall of the corpus. These cases were operated on, respectively, Dec. 11, 1917, and Jan. 17, 1918. The plans of procedure were practically identical, so that the following description applies to both. In the case with the second degree laceration of the perineum, the perineum was repaired at the time hysterectomy was performed. In the case with the third degree laceration, the laceration was not repaired until four weeks after the hysterectomy.

*Operation.*—The usual circular incision was made around the cervix at its juncture with the vaginal mucosa. The tissues were separated from the cervix to a limited extent and the cardinal ligaments were penetrated and tied with No. 2 chromic catgut. As the free ends of these sutures were to be used at the end of the operation, a forceps was attached to each group. The anterior vaginal wall was now incised in its middle from a point immediately below the vaginal trigone to the utero-vesical area and through the mucosa and fascia.

The bladder was next completely separated from the fascia of the anterior vaginal wall and from the anterior surface of the cervix. Posteriorly the tissues were likewise separated from the cervix. Anteriorly the peritoneal reflection was incised. Posteriorly the peritoneal reflection was not incised. The corpus uteri was delivered through the anterior peritoneal opening and a strip of gauze to which was attached a piece of catgut, was passed into the peritoneal cavity to protect the intestines and prevent them from protruding.

The fundus was now brought forward to the vulva; when the cervix is not too large it should be returned to the vagina, but in the cases here cited the cervixes were greatly hypertrophied, and the operation was completed with practically the entire organ out of the vagina. The corpus was removed from above down as is done through the abdominal route. When the corpus was severed from its broad ligament attachments, there remained only the thin posterior

septum attached to the cervix. Before cutting this last connection, the index finger was passed posterior to the cervix to direct the incision.

The next steps were adopted to prevent a recurrent prolapse of the vaginal vault and the bladder, and involved a principle similar but differently applied to that presented before this body in a preliminary report by Dr. Reginald Rawls, of an operative procedure for the cure of cystocele and the lapping of the anterior vaginal fascia. It might be appropriately stated at this juncture, that the idea of lapping the anterior fascial structure was conceived by us independently.

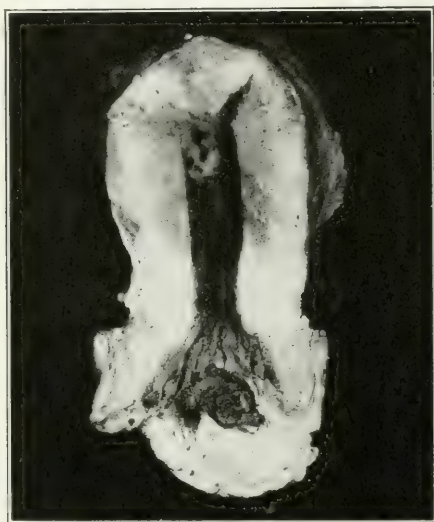


FIG. 1.—Greatly hypertrophied uterus and cervix, 15 cm. in length. Polyp in uterine cavity. A fibroid 4 cm. in diameter removed from the anterior wall of uterus. An extensive erosion of the cervix. Microscopic section shows regular and hyaline myomatous tissue.

The method of application to be described was suggested by me in an article read before the American Gynecological Society, June 1, 1917. The paragraph to which I refer reads as follows: "Sometimes the anterior wall like the uterus is considerably hypertrophied; when this is the case the mucosa can be removed in part from one lateral strip and the strips overlapped so as to give additional support."

The two flaps of the anterior wall were now treated in the following manner:

Each flap was trimmed longitudinally to practically one-half its original size and from the right flap, or that to the left of the operator, the mucosa was removed, leaving it an irregular quadrilateral area of fascial structure. This flap was severed crosswise in the immediate region of the trigone to the extent of about 1 cm. so as to permit of an exact adjustment of this flap when its free longitudinal cut border was transferred and anchored under the opposite flap. Four mattress sutures were used to anchor the denuded flap. The first suture penetrated the undenuded flap from without in where the lateral vaginal wall met the anterior wall and on a line with the anterior limits of the vaginal trigone. It was then made to penetrate the denuded flap at its upper angle from without in and from within out at  $\frac{1}{2}$  cm. or more from the longitudinal cut border of the flap. The suture was then made to penetrate again the undenuded flap, but from within out near its original entrance. The lower angle of the denuded flap was prepared in a similar manner, the suture finding its point of anchorage to a stable area of the vagina in the region of the white line. Two or more mattress sutures were placed between these two points, so as to straighten out and fix the free longitudinal border of the flap when the sutures were tied. Three or more interrupted sutures of chromic gut or kangaroo tendon were now passed through the free longitudinal border of the undenuded flap at the meeting of the mucosa and the fascia. The suture which penetrated the lower angle of the undenuded flap was tied first. After the interrupted sutures were tied, a continuous suture of chromic gut was used to complete the adjustment of the undenuded flap. One strand of each chromic-gut suture surrounding each so-called cardinal ligament was utilized as a running suture along the posterior cut surface of the vaginal vault to prevent hemorrhage, which not infrequently occurs from this surface. The remaining strands were now tied to approximate the cut ends of the cardinal ligaments. These latter sutures were used again and made to penetrate the newly constructed anterior vaginal wall from within out at its lower border and tied to the sutures passed through the posterior vaginal wall. Before tying these sets of sutures, a narrow strip of iodoform gauze was passed into the posterior vaginal space. Iodoform packing in the vagina completed the operation.

The features which I would particularly emphasize in this technic are first, the separation of the cellular tissue at the beginning of the operation from the posterior surface of the cervix, up to the peritoneal reflection without opening into Douglas's cul-de-sac.



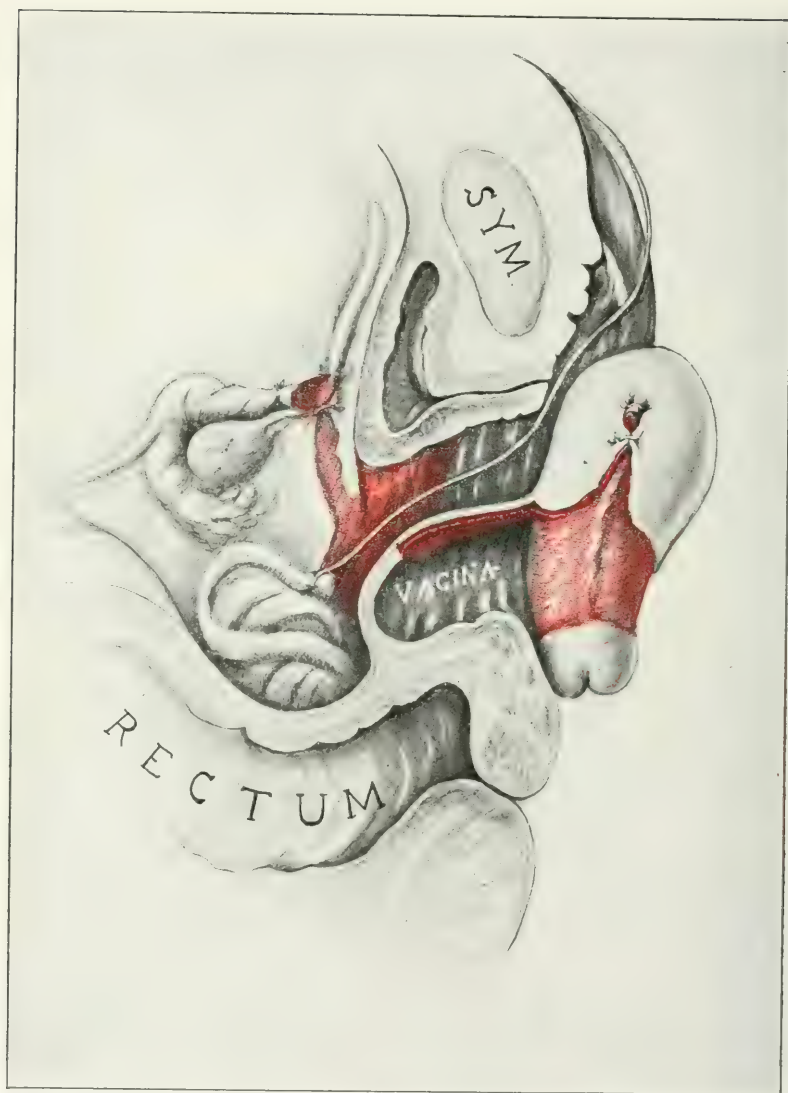


FIG. 2.—Sagittal section showing uterus delivered at the vulva and all its attachments severed except the posterior vaginal barrier. By this technic the peritoneum is protected from vaginal contamination.

The great advantage of not entering the peritoneal cavity at the beginning of the operation, was that the continuity of tissues here acted as a barrier to prevent the contents of the vagina from entering the peritoneal cavity and the intestines from protruding into the vagina, also it prevented the cervix uteri from coming in contact with the intestines and peritoneum when the fundus was antverted and the cervix was forced back into the vagina.

The second feature pertains to the removal of the corpus, which was delivered through the anterior peritoneal opening and operated on at the vulva. Each step in its removal was executed with greater ease and exactness by attacking the upper portion of the broad ligaments first and working downward, than by attacking the tissues around the cervix first (corpus remaining in peritoneal cavity) and working upward.

The third feature was the reinforcement of the anterior vaginal wall by lapping the fascia and anchoring the cut margins to the stable areas of the vaginal canal and approximating the cut surfaces of the cardinal ligaments.

Previous to operation a 10 per cent. nitrate of silver solution was applied to the vaginal mucosa and the external os closed with a cat-gut suture.

The Emmet-Baldwin operation for procidentia and cystocele takes up all slack and doubles the fascial strength of the anterior vaginal wall. Its principle is correct, but the application of the technic is limited as instanced in the two cases here reported.

Lapping the fascia of the anterior vaginal wall and approximating the cardinal ligaments, as here described, involve the same principle and produce the same results, from a mechanical standpoint, as does the Emmet-Baldwin operation.

This manner of fascial reinforcement, is equally applicable to rectocele and cystocele. In this connection I would request the privilege of making a preliminary report at our next meeting upon "Fascial lapping as a means of curing rectocele."

CASE I.—Mrs. E. N., aged sixty-two. Reached her menopause at forty-eight. She did not flow again until about five weeks before operation, Dec. 11, 1917, during which time she had four uterine hemorrhages. A year previous to the hemorrhages, she noticed a leukorrhea, but not of an irritating character. In order to empty her bladder she was obliged to assume the erect position. She had had three children, forceps used at birth of first child thirty-six years ago. Ever since the uterus has been more or less prolapsed, but partly out of the vagina since the birth of the last child born twenty years ago, and for the past seven years the cervix and anterior

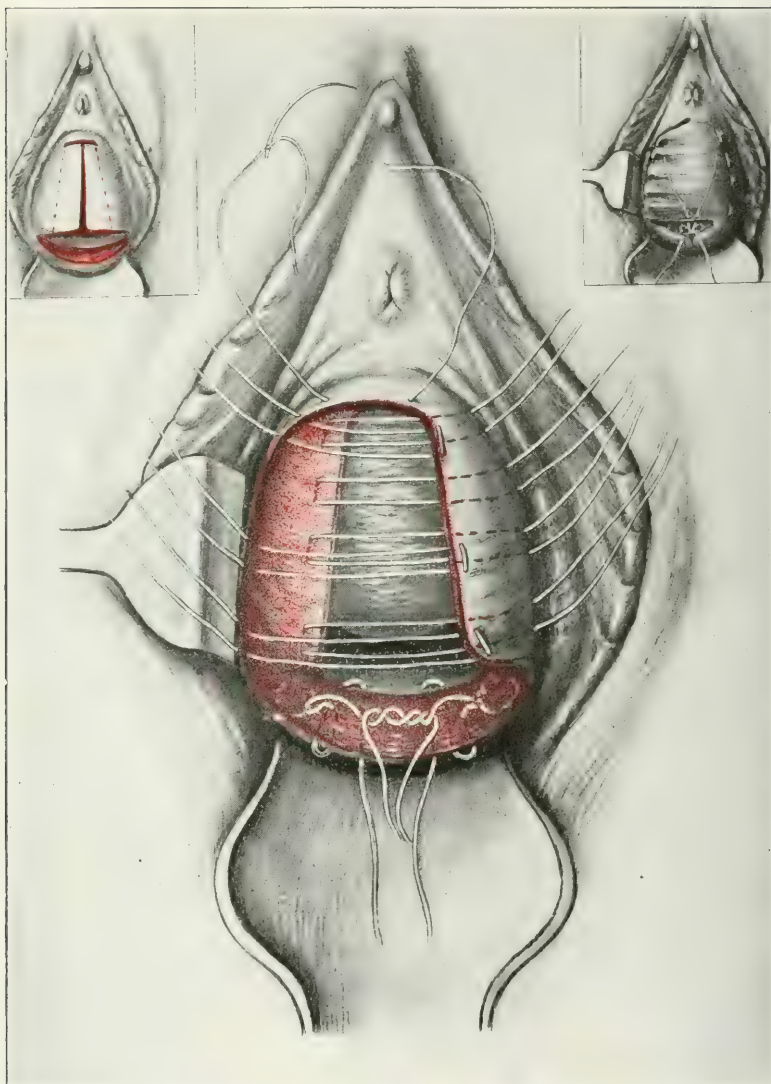


FIG. 3.—The left marginal insert shows the initial longitudinal incision on the anterior vaginal wall and the dotted lines indicate about the extent of longitudinal trimming of the flaps.

The central illustration shows one flap denuded of its mucosa and the other flap undenuded and the sutures in position. On each side of the posterior vaginal cut surface can be seen a bundle of tissue penetrated and tied by a chromic-gut suture. One strand of each of these sutures is used to check hemorrhage from the posterior vaginal wall and the other to approximate the lateral bundle of tissue or the cardinal ligaments. The right marginal insert shows the lateral sutures anchoring the flaps tied. The continuous suture approximating the mucus edges is here accidentally omitted. The sutures which approximate the cardinal ligaments is seen past through the lower border of the newly constructed anterior wall. A small narrow strip of iodoform gauze is placed in the lower angle of the wound and the anterior and posterior sutures in the vault of the vagina are tied. The vagina is then packed with iodoform gauze.

and posterior walls have protruded from the vulva to an extreme degree. On examination it was discovered that the cervix uteri was greatly hypertrophied; the entire anterior wall of the vagina and a portion of the posterior wall presented externally. The uterine canal measured 10 cm.; the corpus unusually large and hypertrophied was situated posteriorly, forming an acute angle with the elongated cervix. The perineum was lacerated to the second degree and greatly stretched.

*Pathological Report. Macroscopical.*—On wall 2 cm. at fundus, cervix hypertrophic, os everted, rugated. Section of mucosa is curetted, large amount of blood clot in curetings. One tube corner shows an elevated area 3 cm. in diameter with shaggy surface, on section of this there is penetration of the myometrium by granular tissue. Received separately a tumor 3 cm. in diameter pearly gray on section said to be removed from ovary. Received separately portion of ovary showing small cysts. Section of ovarian tumor of fundal tumor and of curetings.

*Microscopical.*—The section of the curetings shows only blood clots with amorphous pigment. The ovarian tumor is composed of enormous masses of cystic glands containing a reddish stained mucoid substance. The epithelium in the ovarian tumor as well as the uterine tumor mass is high, columnar, arranged in a singular row and in most places the nuclei are located at the bottom of the light-stained cell. In this scanty stroma one sees certain small solid cell aggregates with central nuclei. The uterine myometrium shows such coils as described above in the tissue spaces.

CASE II.—Mrs. K., aged forty-two. Four children. First child was born twenty-one years ago, forceps used. Last child about fifteen years ago and ever since, or fifteen years ago, has noticed "something coming out" of the vagina. Last regular menstruation Dec. 7, 1917, lasted five days. Normal amount. On Dec. 23, 1917, she had a sudden and profuse uterine hemorrhage, demanding the attention of her physician. Examination showed a large hypertrophied and eroded cervix protruding from the vagina. The perineum was lacerated to the third degree. The uterine canal measured  $12\frac{1}{2}$  cm. The corpus was situated well forward and a fibroid the size of a small apple, grew from its anterior wall.

*Diagnosis.*—Complete prolapse of the cervix and anterior wall. Extensive erosion of the cervix, fibroid of the uterus. X-ray taken in standing position. A catheter filled with mercury was passed into the empty bladder. The tip of the catheter seen, marks the lowest point of the bladder. The loop of the catheter marks its highest point. The funnel-shaped portion of the catheter extends out of the urethra 3 cm. or more. The posterior surface of the bladder was, as here shown, very extensive, reaching from a point 4 cm. or more below the symphysis to a point 4 cm. above the symphysis.

A metal cervical dilator, with a lead button at its proximal end, was passed into the cervical canal, so as to locate the position of the cervix. Several strips of oxide of zinc plaster were fastened to the



legs in such a way as to form a hammock, in which the stem rested, so as to prevent its escape. When the patient was in the erect position, the entire cervix was supported by this hammock, and was therefore prevented from assuming its lowest position. It can, however, be distinctly seen from behind on a lower level than the buttocks. Patient quite stout.

*Pathological Report. Macroscopical.*—Uterus and cervix greatly elongated and hypertrophic with deep lacerations in the cervix. Uterus is 15 cm. long. Globular myoma of 4 cm. in diameter received separately. Section from myoma. Uterus reserved for photography. The fundus contains a mucous polyp of  $1\frac{1}{2}$  cm. in length.

*Microscopical.*—The section shows regular and hyaline myomatous tissue.

*Diagnosis.*—Elongated and hypertrophic cervix. Mucous polyp of the fundus uteri. Myoma uteri.

## TERTIARY SYPHILIS OF THE CERVIX UTERI.

BY

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(With six illustrations.)

THE subject of tertiary syphilis of the cervix uteri is one about which comparatively little has been said. It is most surprising to find, when consulting standard works on gynecology, that in most instances the subject is not discussed at all and in the few, in which it is mentioned, the information is notably of little value. This is true possibly with one or two exceptions. The literature on the subject is also comparatively inconspicuous and with the exception of a few monographs, affords very little light upon the subject.

In the early literature there appear several cases which have been rather frequently quoted. Duparcque in 1839, in his work "*Traite sur les Alterations Organiques de la Matrice*," describes the cases of Meirieu and Lagneu of the years 1823 and 1828 respectively. These, with the addition of Duparcque's own observation, are in all probability the first cases on record, which might be regarded as tertiary syphilis of the cervix. These were all cases of cervices which were considerably enlarged and ulcerated, but yielded rather promptly to specific treatment.

Lancereux in 1864 argues that there is some evidence that tertiary lesions of cervix occur in the form of gummy products just as they do in other viscera. As proof of this statement he says that there

are cases recorded in which well informed physicians, having suspected a tertiary lesion of the uterus, have had their diagnosis justified by the good effects of specific treatment. He refers to the cases of Duparcque and Montanier. In Montanier's case the cervix was enlarged to the size of a fetal head of a seven months' pregnancy, was firm throughout and was not ulcerated. In nine weeks the cervix was normal, the mass having entirely disappeared under antiluetic treatment. Lancereux calls attention to the fact that the apparent rarity of the lesion may be due to the possibility of readily confusing it with other lesions of the cervix, a point which will be discussed later.

Henry in 1874 reported three cases of induration and enlargement of the cervix, the result of syphilis, the enlargements and induration disappearing rapidly under antiluetic treatment. Henry states, that so far as he is aware, the works on diseases of women do not even refer to the possibility of such a condition. He says, that he does not for a moment contend that in the cases there was a local collection of specific syphilitic products, namely, gummata, but rather the tenseness and induration depended upon the "plastic" nature of the inflammatory products. This "plastic" condition, he thinks, accounted for the lack of breaking down, which he holds, would have taken place rather early in a gumma. These cases are mentioned by Neuman, who incorrectly quotes Henry Morriss as the author of them.

Neuman in 1896 describes in some detail gummous ulcers of the cervix. He mentions that the literature on the subject is very scant. He quotes Mauriac as stating that Fournier sees a half a dozen cases of tertiary syphilitic lesions of the cervix yearly. He states that the lesion always occurs in the form of gummous ulcers, and claims that typical gumma in classical form do not occur in the cervix uteri as they do in other situations. The existence of gummous processes in the cervix he cannot doubt; as proof of this he mentions three of his own observations. He holds that gummous processes in the cervix alone are most infrequent, and more usually one finds lesions of the vagina and external genitalia associated with them. In differential diagnosis, he mentions particularly that great difficulty can arise. Gummous ulcers and carcinoma are very apt to be confused; he mentions several characteristics of each, but states that in difficult cases, by examining microscopically pieces of tissue which break off, one can confirm or exclude cancer, and if the tissue is negative as regards cancer, one can establish the luetic nature of the lesion by its rapid healing under antisyphilitic

treatment. The prognosis, he mentions, is usually good, but recurrences frequently take place, and, therefore, it is necessary to carry out energetic and prolonged antiluetic treatment. He tests one cannot disregard the possibility of a carcinomatous or tuberculous change taking place in these lesions.

The first definite information was published by Oppenheim in 1908, who describes the lesion both in the gross and microscopically. At this rather recent period, he was forced to admit that concerning gummatous lesion of the cervix very little is known. Only isolated observations are reported and still, he says, gumma of the cervix is so not rarely met with. Oppenheim describes the lesion as occurring in two stages, namely, the gummous nodule and the gummous ulcer. The gumma appears on the cervix in the form of large nodules, which readily undergo softening giving the tumor a rather boggy consistency. The integrity of these enlargements does not last long, as the lesion is most frequently found in the form of gummous ulcers, which show the same characteristics as these lesions do in other locations. They appear as sharp-edged, sometimes kidney-shaped ulcers, which reach considerable depth, and whose bases are covered with a grayish-yellow deposit which can be easily wiped off. The edges, as a rule, are widely undermined, abrupt and they appear as if they were punched out. There is no inflammatory reaction in the surrounding tissue. The touch is entirely painless. Healing follows as a result of the production of a radiating scar, which has a tendency toward constriction. The epithelium on the surface is thickened and undergoes a change similar to leukoplakia. The histological findings deal with specific gummous changes, a granulation tissue composed of densely arranged plasma cells, which contrast themselves sharply from the surrounding tissue. In the center of the granulation tissue one finds that the cells' outlines are indefinite, and their nuclei lose their property of staining deeply. The vessels have long since been closed through endarteritis but remain visible the longest; the whole picture turns finally into a diffusely colored structureless mass (caseation). On the other hand, one finds that the syphilitic granulation tissue changes itself into a connective tissue in which the plasma cells become spindle shaped, arranged parallel, and there arises a tense connective tissue, poor in cells. In the infiltrated area in the surroundings of the foci of caseation, numerous giant cells are found.

Laffont in 1908, in a rather extensive monograph, reviews the subject and collects cases from the literature. He describes the lesion under three heads, gummous ulcer, leukoplakia and sclerosis.

He describes these conditions in the gross, but says almost nothing about their histological picture. He also mentions the confusion of the lesion with cancer and states the differential characteristics of these lesions in the gross.

In 1916, Gellhorn and Ehrenfest, who, to my knowledge, are the first gynecologists to write extensively on the subject, published a monograph, which deals intelligently and in great detail with the subject of syphilis of the internal genital organs in the female, in which tertiary syphilis of the cervix is thoroughly dealt with. It is from this article that I obtained a considerable amount of my information and also from Dr. Ehrenfest personally. They quote twenty-one cases from the literature, of cervical lesions directly or indirectly the result of tertiary syphilis. Many of these cases are quite convincing and in particular the case of Hoffmann. In this case the patient had a positive Wassermann, a necrotic ulcerated tumor the size of an apple on the anterior cervical lip, waxy in appearance, uterus greatly enlarged, movable and not tender. An excised piece of cervical tissue showed a gumma. Patient died four weeks later. At autopsy, the entire uterus was involved in a gummosus process extending from cervix to fundus, and penetrating deeply into the musculature. Gummatous masses were also found in right tube and ovary, retroperitoneal glands, liver and lungs. They also report six cases observed by themselves, several of which, to my mind, are somewhat doubtful. One case, their best case, was not definitely differentiated from tuberculosis. Two others might be considered good cases; one from the standpoint of the therapeutic test, the other from the histological picture; in the latter I refer to the case of the so-called malignant gumma. Here again the question might be asked, was tuberculosis ruled out and did the patient die as a result of a pyogenic infection? The remaining three cases, in my opinion, do not furnish evidence enough to definitely class them as tertiary lesions of the cervix.

From the standpoint of differential diagnosis one must particularly guard against tuberculosis and cancer. Carcinoma seems to have been the most frequent lesion with which it has been confused. Gellhorn and Ehrenfest state that of the twenty-one cases which they quote, fourteen were first diagnosed as cancer. Oppenheim describes in detail the gross appearances of gummatous, carcinomatous and tuberculous lesions. The descriptions show each as having their distinct characteristics. However, judging from the confusion that has arisen in the past, the points of real differentiation lie elsewhere. Although the gross appearance, the clinical history,



and the general health may suggest the lesion, microscopical examination, in my opinion, is the only safe method through which we can reach definite conclusions. Gumma and carcinoma should involve no great difficulty even in the face of the statements that renowned pathologists have confused the lesions. On the other hand, as it is well known, gumma and tuberculosis can offer considerable difficulty. McCallum says that in many instances it seems impossible to make an absolute differentiation between them. The demonstration of the presence of tubercle bacilli or spirochete would settle the matter, but these searches are notoriously uncertain. The inoculation of a guinea-pig with material would be better and, while waiting for developments, I might add, vigorous antiluetic treatment should be instituted. The Wassermann test should have considerable weight, but tuberculosis and syphilis are rather common diseases and, therefore, could easily exist coincidentally. The effect of therapeutic measures should finally clear up the situation.

In conclusion it may be said that on the future depends our more detailed knowledge of the subject. The frequency or infrequency of the lesion is apparently a debatable question. From the confusion of the lesion with carcinoma, the frequency of the disease may have been overlooked; radical operations may have occasionally been performed for malignancy, where malignancy did not exist and, as Thiebierge mentions, in the case of primary lesion these tertiary cases may play also a considerable part in swelling the percentages in so-called cancer cures. On the other hand, when Cullen of Baltimore, whose painstaking efforts are so well shown in all his works, states in his book on cancer in 1900 that he has had no experience with this lesion, and, when in a later work in 1907, Kelly and Noble (in which the chapter on pathology was written in Cullen's laboratory), no mention of the condition is made, one is justified, in my opinion, in considering the lesion as rather infrequent. This assumption is further strengthened by very recent information received through a personal communication from Dr. Cullen. He, with the thoroughness that characterizes all his work, took the trouble after receiving my letter to request each member of the gynecological staff at Johns Hopkins to inform him of their experience with the subject. The only positive information he obtained was the statement of Dr. W. W. Russell, who had observed a single case. Dr. Novak had observed a primary lesion from which spirochetes were demonstrated. With these exceptions, there has been no experience with syphilis of the cervix at Johns Hopkins. Dr. Cullen himself states that he had no experience with the lesion

up to date. He suggests in my observations, that the demonstration of spirochetes would absolutely clinch matters; without these, he thinks the diagnosis of syphilis as absolute would be questioned at least by some. He further states that ulcerated cervixes, malignancy excepted, have been only exceptionally observed in his laboratory during the past five or six years, some half a dozen cases being seen, none of which showed a picture analogous to my observation.

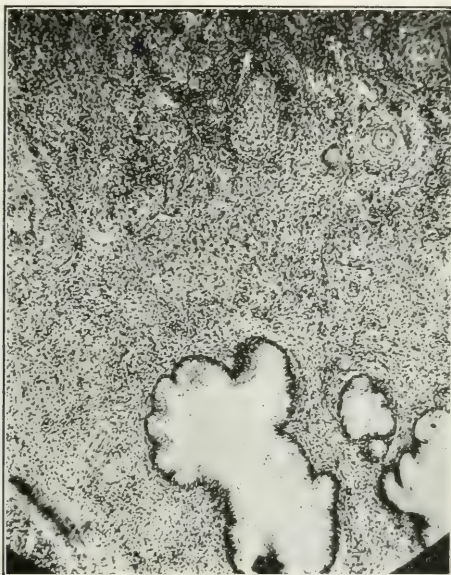


FIG. 1.—PHOTOMICROGRAPH (Low power). The tissue is recognized as cervix by the presence of the large cervical glands in the picture. In the fibromuscular structure is seen a diffuse inflammatory reaction particularly noticeable toward the left. In the immediate center is an area of epithelioid cells diffusely arranged. To the left are two areas of epithelioid cells more or less distinctly isolated, surrounded by a dense zone of small cell infiltration. In the vicinity of the thickened blood vessel in upper left portion of the picture is seen a typical giant cell.

However, the establishing of the frequency or infrequency of the lesion, as the case may be, will depend directly on systematic efforts in the future to find or exclude it, and, when a definite case is observed, it behooves us to report it in detail. With these points in mind, I think it is appropriate to report the following observation:

*Case Report.*—Patient was a woman thirty-five years of age, ad-

mitted to the hospital October 29, 1917, with a clinical history of bleeding from the vagina. Family history, unimportant.

*Past History.*—General health good; no serious illness during adult life; typhoid and scarlet fever in childhood; no complications. Usual diseases of childhood; no further illness with exception of nervous condition two years ago, which patient attributes to unhappiness in family. Patient at that time extremely nervous. She had a slight loss of memory from which she entirely recovered in course of two or three months. About this time the patient completely lost her sight in the left eye, which she never regained.

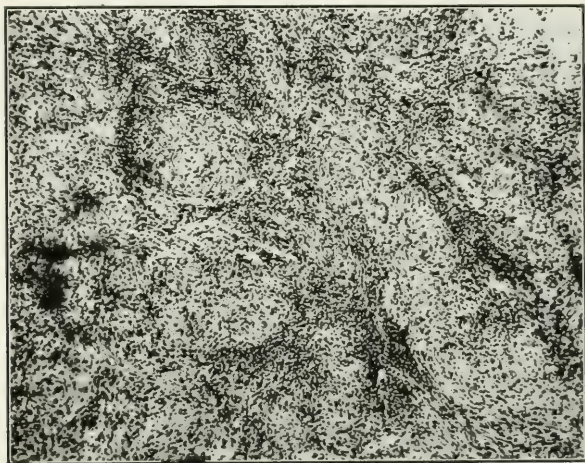


FIG. 2.—PHOTOMICROGRAPH (Low power). Two distinct features are present in this picture, the marked areas of small cell infiltration and the marked proliferation of epithelioid cells. The latter are distinctly arranged in groups, showing a striking tendency to tubercle formation. These areas are considered small gummoses areas, miliary gummata. A giant cell is seen in the center of the largest gummoses area, slightly to the left of the center of the field.

Patient gives a negative history when questioned as regards the symptoms and signs of secondary syphilis.

*Marital History.*—Married seventeen years; three normal pregnancies; last eight years ago, which was a twin pregnancy; no miscarriages; all labors and puerpera normal; four children, living and well. Husband lived with patient until two years ago, just before patient's disturbed mental condition came on. During the four years before this, husband would be inexcusably absent from his home for periods of several weeks. It is said he contracted an "incurable disease."

*Menstrual History.*—First period at sixteen years, regular, every thirty days, ten days' duration, profuse, last, September 4, 1917; previous, August 4, 1917. Eleven months after birth of twins,



eight years ago, patient flowed profusely for twenty-one days. Never occurred again until present illness.

*Present Illness.*—September 11th, patient began flowing two days after menstrual period stopped; has been bleeding for past six weeks; had a continuous flow for first three weeks, at times rather profuse, at others only very moderate; after first three weeks there was a watery discharge with some odor. For last three weeks flow only very moderate, hardly soiling napkin. October 28th, there was a profuse flow and loss of about half a teacupful. Lost similar amount of blood later in the day.

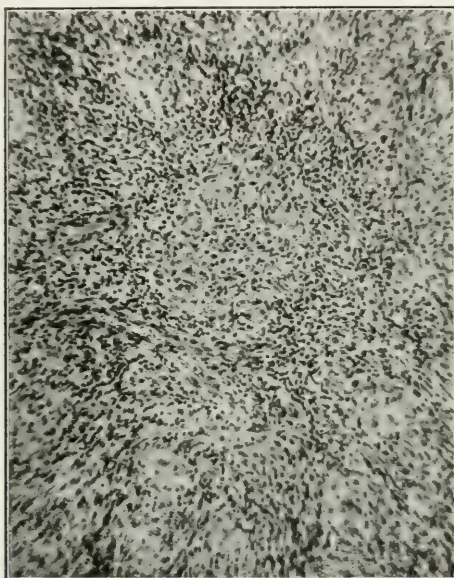


FIG. 3.—PHOTOMICROGRAPH (Moderately high power). The field shows a gummatous nodule to the left of the center of the field, surrounded from the rest of the tissue by a zone of small cell infiltration. Note the small cells have a slight tendency to partially invade the gummous area and also note the absence of caseation. A giant cell is seen in the lower portion of the nodule.

*Pelvic Examination.*—External genitalia negative; fresh bloody discharge from vagina; perineum gives fair support, but is slightly relaxed; cervix at level of interspinal line points backward and to left; generally indurated, markedly enlarged, and bilaterally lacerated; freely movable, no lateral infiltration into broad ligaments; body of uterus forward, slightly enlarged, regular in outline, not tender, firm consistency and freely movable. Adnexal regions on each side apparently negative. Tubes and ovaries not distinctly palpable, nor is there any tenderness or induration on either side. *Per speculum*, cervix shows bloody discharge from external os, but



no irregularities or loss of tissue. Pressure on os causes increased bleeding. No tenderness on manipulation; cervix about twice normal size.

*Diagnosis.*—Possible malignancy.

*Physical Examination.*—Patient has well-developed bony frame, but poor musculature and is poorly nourished; examination of the eyes was negative; heart and lungs normal; reflexes were slightly exaggerated; blood pressure 110-78; red blood cells, 4,000,000; white cells, 7250; Hg. 85 per cent.; temperature was normal throughout stay in hospital. Several urine specimens examined

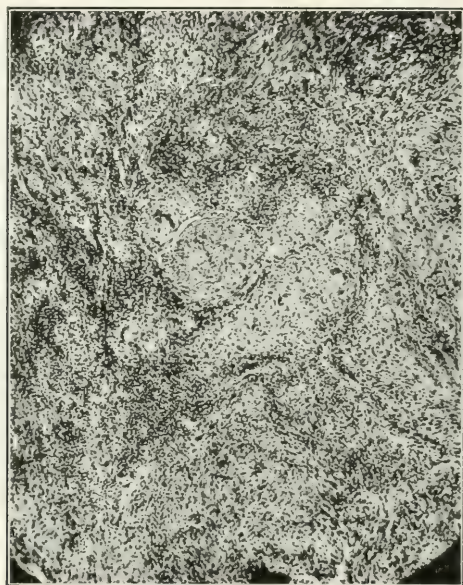


FIG. 4.—PHOTOMICROGRAPH (Low power). In the center is noticed an artery, whose wall is markedly thickened and whose lumen is obliterated. Outside the vessel wall is a conspicuous gummatous area, with a zone of small cells densely arranged around the periphery of this area and in several places invading it. Four giant cells are seen in the gummatous area. The picture is one of so-called gummatous periarteritis. The remaining portion of the field shows considerable small cell infiltration.

and always proved negative. Ophthalmoscopic examination was made in early part of January, 1918, which revealed a diffuse cloudiness of the vitreous with large and small floating opacities, making it impossible to discern the details of the fundus; vision  $\frac{3}{80}$ -impression, luetic choroiditis. This examination was repeated on February 8th; the findings were about the same as previously noted.

*Operative Note.*—October 30, 1917. Dilatation and curettage. Uterine cavity was found to be  $3\frac{1}{2}$  inches long and findings were

identical to those on first examination; the cervix through the speculum was twice normal size, both lips equally enlarged and firm, but densely indurated; there was no apparent loss of tissue or ulceration, but on rubbing with gauze, the cervix oozed freely and was definitely reddened. The patient was curetted and only a moderate amount of tissue was removed; the cervical canal was also curetted; a piece of tissue 2 mm. thick and about  $\frac{1}{2}$  cm. square, was removed from the posterior lip. The scrapings of the endometrium on microscopic examination showed nothing of any note, except a mild chronic interstitial endometritis. The cervical tissue showed an inflammatory condition throughout the section. Everywhere there was evidence of small round-cell infiltration; the normal mus-



FIG. 5.—PHOTOMICROGRAPH (Moderately high power). The picture shows a small thickened blood-vessel with an obliterated lumen in the upper right quarter of the field; below and to the left of this is a distinctly circumscribed gummatous area, surrounded by a distinct zone of small round cells. The remaining portion of the field shows very well the fibromuscular structure of the cervix.

culature was seen only here and there running in definite strands. In many places it could be seen prominently between the round-cell infiltration. Also, diffusely scattered through the section, distinguishable from the small cells and the normal muscle, were areas of large cells with pale staining protoplasm and nuclei. The cell outlines were not distinct, but the nuclei were mostly oblong with rounded ends; giant cells were numerous throughout the section; four or five appearing in a single field; the nuclei of these giant cells are definitely placed in the periphery of the cell; in many places the

grouping of the small round cells and the epithelioid cells take a form not much different from a miliary tubercle, but there is a noticeable absence of caseation. In many of these areas can be seen a central giant cell; the lesions were particularly marked around the blood-vessels; there being several areas where the vessel lumen was almost obliterated, the wall definitely thickened and surrounded by these epithelioid cells, outside of which there was a definite zone of round-cell infiltration. In the zone of epithelioid cells, giant cells

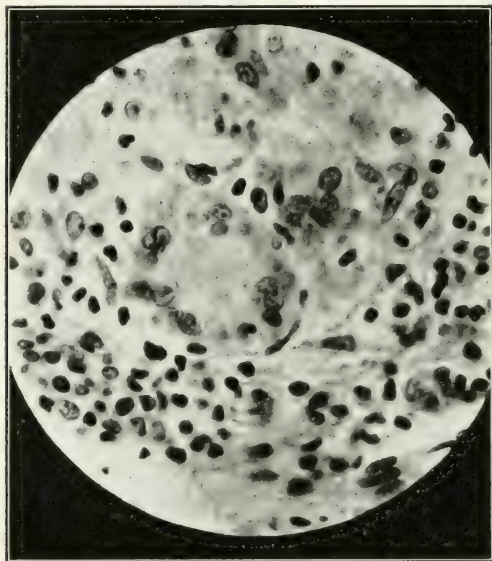


FIG. 6.—PHOTOMICROGRAPH (High power). A large giant cell is seen almost in the center of the field. Note the peripheral arrangement of the nuclei. The larger cells, particularly noticed in lower right quarter of the picture, with indistinct cell outline and large pale staining nuclei with a distinct nucleolus, are epithelioid cells. The smaller cells with dark staining nuclei are lymphoid cells. Plasma cells were only occasionally found. Two or three are seen in this field, one fairly definite one with a distinctly pycnotic nucleus is seen in the upper left portion, the third cell from the edge of the section on a radius which would almost bisect this quadrant.

were distinguished. In one of these areas as many as five giant cells can be seen. The blood-vessels are diminished in number throughout the section and those that are present have thickened walls and narrowed lumina; under high power the nuclei of the epithelioid cells stain lighter than the surrounding cells. The process appears to be one of partial liquefaction; the areas of small round-cell infiltration were made up chiefly of lymphoid cells with an occasional plasma cell, but these were by no means frequent. The tissue can be distinguished as cervix by the presence of normal squamous



epithelium and normal cervical glands. Diagnosis of tuberculosis or gummata was made. More tissue was removed from cervix for the injection of guinea-pigs and staining for spirochetes and tubercle bacilli. Injected guinea-pigs proved negative, one pig dying at the end of three weeks, the other after ten weeks, neither showing any evidence of tuberculosis; several sections were stained for tubercle bacilli and proved negative; about 200 sections were studied for spirochetes, but the search proved unsuccessful; Wassermann report of October 30th, was positive 2 plus.

An examination made November 25th, showed the cervix definitely enlarged; the same as on previous examination, it was thought advisable to remove a piece of the anterior lip to absolutely exclude carcinoma. The section showed no evidence of malignancy, but did show a marked endarteritis. Round-cell infiltration was not conspicuous, nor were there any definite areas showing epithelioid cells. Occasionally there was a suggestion of this formation, but nothing marked. No giant cells were found; the tissue appeared more or less edematous and there were definite areas of hyaline change. Patient had already had antiluetic treatment for three weeks. This consisted of vigorous treatment with mercury, potassium iodide and salvarsan.

An examination just previous to discharge from hospital on December 1st, showed the cervix about twice normal size, anterior lip larger than posterior. Freely movable, not tender, fairly firm; has a distinctly roughened surface, no areas of loss of tissue, except where sections were taken. These were healing by granulation.

Examination on January 15th showed the cervix was found entirely healed and of almost normal size and consistency. It presented only a slight bilateral laceration and a small indentation in the posterior lip. There was no vaginal discharge and the cervix was everywhere covered by normal squamous epithelium. Since the antisyphilitic treatment was instituted, patient has had three normal menstrual periods, each of six days' duration and of normal amount. She has gained about 8 pounds and says she has never felt better in her life. She has also noticed that since the middle of December she is gradually regaining sight in the left eye.

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## "HEMORRHOIDS" OF THE URETHRA IN WOMEN.\*

BY

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(With one illustration.)

VASCULAR tumors of the urethra in the female are of frequent occurrence. The large majority of those reported, however, include papillary polypoid angiomata or what is commonly called urethral caruncle. We are very familiar with these bright red granular growths which are composed of vascular loops, mostly arterial, which have proliferated among the papillæ and connective-tissue layers of the mucous membrane of the urethra usually near its orifice.

Other kinds of vascular growths are rare.

Two types may be distinguished, one a true hemangioma of the telangiectatic form which, according to Virchow, represents a "congenital malformation consisting of rudiments of the embryonal duplexity of the vagina which has undergone considerable development and fallen into a true telangiectatic condition."

The other type consists of enlargement of the urethral veins. The varices, when they project into the canal may draw with them a portion of the urethral mucous membrane and form tumors of considerable size. The growths are bluish-red, painless, usually compressible, are covered with mucous membrane and may be situated anywhere in the urethral canal. The term "urethral hemorrhoids" has been applied to both types of venous growths, but should properly be reserved for the latter. The literature contains comparatively few references to this condition of the urethra. Especially is this true of the modern text-books on genitourinary diseases, which contain only a passing mention of it, if any at all.

It has been best described by Winkel(1). Prior to his description and correct classification of these venous angiomata much confusion

\* Read before the Philadelphia Obstetrical Society, February 7, 1918.

had existed and various conditions had been classed as urethral hemorrhoids. Reference to them may be found in the works of some of the earlier writers, as Clarke(2), Rigby(3) and Scanzoni(4). Richet(5) in 1872 claims to have observed eight cases, but if the one he describes is a fair index to all of them they consisted only of prolapse of the urethra, the veins of which had probably become thrombotic. Wedl(6) and Pozzi(7) describe blue or purplish growths at the urethral meatus which were probably deeply colored caruncles. Palm's(8) exhaustive review of the literature relating to papillary polypoid angioma contains no reference to true "urethral hemorrhoids." Probably the first one of an interesting series of urethral growths reported by Hirst(9) in 1909 belongs to this class of angiomata.

Two cases of urethral hemangioma have come under my observation during the last five years. One represented a diffuse type of the condition, practically multiple urethral hemorrhoids, while the other consisted of a single, circumscribed, cavernous angioma. Both were of interest because of their rarity, their apparent long existence before the onset of any symptoms, and their possible confusion with malignant neoplasms of the urethra.

The first patient was referred to me by Dr. A. Spencer Kaufman on September 10, 1913, and presented the following history.

Mrs. E. M., aged sixty-two, married. Her previous history contained nothing of interest. For one year prior to my examination of her, she had noticed a small growth at the urethral meatus. It had gradually increased in size and had occasionally caused some discomfort on urination. During the past four weeks irregular bleeding from the urethra was observed. The hemorrhage was small in amount, not related to urination, and was not associated with any increased discomfort. On examination a purplish mass was found to be attached to about two-thirds of the circumference of the urethra and protruded about 1.5 cm. The surface was irregular and glistening and at one spot there was found an ulcer from which a blood-tinged serum was escaping. By palpation of the urethra along the anterior vaginal wall it was found to be thickened and somewhat sensitive.

*Operation.*—September 20, 1913, Jefferson Hospital. Ether anesthesia. A circular incision was made around the urethral orifice and the protruding mass was excised. It bled freely. On attempting to suture the mucous membrane of the urethral canal to the edge of the periurethral incision, the mucous membrane was found to be so friable that all of the sutures cut through. This produced in my mind the suspicion of malignancy. I then deter-

mined to excise all suspicious tissue and to accomplish this made a longitudinal incision through the floor of the urethra and anterior vaginal wall. I had to extend this incision almost to the sphincter of the bladder in order to get above the friable, purplish urethral mucous membrane. When sound tissue was reached I removed all of the urethra below it, attached the edges of the sound mucous membrane to the vaginal wall below and to surrounding structures above by interrupted chromic catgut sutures. The bleeding from the bed from which the urethra had been removed was controlled by suturing the vaginal wall into it, leaving an opening posteriorly



FIG. 1.—Ball-valve-like pedunculated angioma of urethra.

at the newly formed meatus through which the urine could be voided. The patient made an uninterrupted recovery, has had no difficulty in voiding urine, and has not complained of urine collecting in the vagina during urination. The pathological report states that the growth was a hemangioma of the urethra.

The second patient, C. N., aged fifty-seven, widow, was referred by Dr. Myer Solis-Cohen because of urethral hemorrhage. She had given birth to two children, the labors were normal and recovery satisfactory. She had always enjoyed good health, except for slight pain and a sensation of tightness in the mediastinum following exertion. About three weeks before my examination,

following an attack of influenza she began to suffer from stinging pain in the region of the external urethral orifice, more or less constant and aggravated by walking. During the last few days there has been slight bleeding. On examination I found the urethral orifice slightly dilated by a globular, dark blue, smooth mass which was partly bulging through it and could be pushed back into the urethra. The mucous membrane at the meatus was not involved in the tumor.

*Operation.*—December 28, 1916. St. Agnes Hospital. Ether anesthesia. An incision about 1.5 cm. in length was made through the floor of the urethra and anterior vaginal wall. The tumor about 0.7 cm. in diameter and 1 cm. long was found to be attached to the anterior urethral wall by a broad pedicle. The pedicle was transfixed and ligated with chromic catgut and the tumor excised. The incision in the floor of the urethra and vaginal wall was closed with interrupted catgut sutures. Recovery was uninterrupted and complete.

*Pathological Report.*—Specimen shows tissue covered with epithelium which is regular showing no tendency to malignancy. The mass proper is made of a loose fibrous tissue with large dilated spaces some having definite walls, containing blood. The picture is comparable to the picture seen in hemorrhoids.

The growths in both of these cases had undoubtedly existed a long time before they produced any symptoms. It would appear that only when they undergo necrotic changes are they likely to give rise to pain and a bloody discharge. They differ from other urethral tumors chiefly in color and in consistency, being soft and compressible. Ulcerative changes taking place in them impart a similarity to malignant tumors and indeed carcinomatous degeneration might be induced by irritation due to long-standing ulceration.

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## PUERPERAL PELVIC INFECTION.\*

BY

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THE subject which has been assigned to me for discussion is one of the greatest importance, not only to the specialist in obstetrics, but to the general practitioner, who is by force of circumstances the obstetrician of the masses.

Puerperal infections have since the time of Semmelweiss interested the keenest minds of the profession, *and yet we feel that it is only within the last few years that the pathology of the several lesions which follow upon the introduction of infective bacteria into the parturient wound during labor or abortion, have been recognized as the working basis for rational therapy.* The whole parturient canal, following delivery, may be regarded as a wounded surface and is therefore a suitable gateway for the entrance of infective bacteria. The uterus, however, must of necessity be the chief port of entry. To understand puerperal infection one must consider for a moment the physiological process which takes place within the uterus after the evacuation of its contents, within a few hours after delivery, due to the rapid retraction and consequent hematosis. The endometrium is more or less covered by a layer of necrosing decidua, which is cast off piecemeal by a process of surface starvation due to the active leukocytosis and the increase of connective tissue cells which takes place immediately under the decidua. This forms a granulation zone which prevents the invasion of all but the more virulent bacteria. The entire cavity of the uterus, except the placental site, becomes epithelioidized by about the end of the first week. In other words, *the interior of the uterus becomes a granulating wound, protected as is the case in the ordinary surgical wound, by its granulation surface.* In the placental site, the thrombi in the open vessels require a longer time for this organization. The site is rough and raised, often covered with irregular masses of decidua, shreds of placenta, fragments of villi, etc. Organization occurs in the thrombotic sinuses, while the bank of granulation thickens and causes the exfoliation of the superimposed masses. This occurs from the tenth to the fifteenth day. The effect of infective bacteria on these normal healing processes varies with the nature and virulence of the microorganism, and the manner by, and soil into which they are introduced. *We must therefore look at puerperal and postabortal infection of the uterus as a wound infection with re-*

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*sorption of toxins.* It is no different from an infection of any wound on the surface of the body, except that the area of lymphatic drainage is greater. *Labor and abortion reduce the resistance of this wound by trauma. The injuries may be natural or instrumental, yet however produced, we are left to deal with a lacerated wound in bruised tissues with its diminished resistance and superficial slough.* Admitting therefore that the uterus either through lacerations or through its endometrium or its placental site, is the chief port of entry, and that the *invading cocci may be of any of the infective organisms*, single or in combination, as the various strains of streptococci, the staphylococcus, pneumococcus, gonococcus, etc., we will attempt to follow their clinical course and study the lesions they produce. *Repeated culture of the interior of the uterus at varying periods in the puerperium show that its contents after the first twenty-four hours are seldom sterile. In fact, over 50 per cent. of the cases which were cultured in our clinic on the sixth day showed the presence of infective bacteria within the uterus, yet these patients did not have sepsis.* This is because all infection depends on two general factors, *i.e.*, the microorganisms and the soil. The virulency of bacteria differ and a coccus which may be harmless in one location and under certain conditions, may become virulent under a more favorable environment. Normally the uterus is protected against invasion from the interior, (1) during labor by the membranes, though in recent years we have shown that bacteria can penetrate the amnion if the labor is long and the membranes have ruptured early, (2) after delivery by the normal reaction in the uterine tissues shown by the formation of a protective granulation zone composed of polynuclear and mononuclear leukocytes, eosinophiles, fibroblasts and polyblasts. Infective organisms must penetrate this zone or pass through abrasions or other injuries to gain access to the tissues outside of the uterus. Thus the streptococcus, staphylococcus and pneumococcus have the power of doing. On the other hand, the gonococcus lacks this power of penetrability and advances along the mucus membrane, reaching the tubes and peritoneum by continuity. Hence we see that the *primary lesion in puerperal post-abortion infection*, if the infecting cocci are not of the hemolytic strains, is found within the uterus, *first in the form of a putrid endometritis*, an infection of the dead and necrotic superficial structures with bacteria in them or upon them, and protected by a granulation wall from further invasion. This condition within the uterus produces few symptoms except a fetid, grumous discharge and a toxemia from the resorption of the toxins produced from this necrosis. Such a case presents certain clinical signs. The uterus is usually large, and more or less relaxed, the cervix is open, the lochia remains bloody, excessive and fetid, the fundus is tender, there is some elevation of temperature, and a slight acceleration of the pulse. Establishment of uterine drainage and proper retraction and contrac-

tion of the uterus promptly controls this type of lesion. *The second type* met with within the uterus may be properly called a *coccal endometritis*, in which the infective bacteria have more marked invasive qualities and are introduced or penetrate into the lymphoid lining and myometrium. Whether they advance further than the interior of the uterus or remain confined within the cavity, depends upon the completeness and development of the granulation zone, and the virulency of the particular bacteria. There is *always an associated metritis* which is but a defensive reaction against invasion. From this primary coccal endometritis and metritis the bacterial invasion may extend through the lymphatics in the uterus and from the uterus or through the veins. These extensions follow a definite course, have a definite history, and produce definite lesions. Inflammation is the reaction of the tissues against these invasions, Nature's attempt at defense and repair. Lymphatic invasion from the cervix is shown in the parametritis postica, so commonly found during the puerperium, associated with an endocervicitis. Extension from the cervix and higher up in the uterus is generally through the lymphatics in the broad ligaments. This extension produces a lateral parametritis. *Parametritis is understood to be an inflammation of the pelvic connective tissues* about the uterus, yet this infection may involve any of the connective tissue surrounding the genital tract, lying beneath the peritoneum from the vulva to the kidney. Hence the term cellulitis is a better one than parametritis. *The bacteria invade this connective tissue from wounds in the perineum, vagina, cervix and lower uterine segment, or they may break through the granulation bank in the endometrium and pass through the uterine wall by way of the lymphatics or blood-vessels.* The *streptococcus* is nearly always the causative agent alone or in combination with the staphylococcus, colon bacillus and occasionally the gonococcus. These bacteria by their presence and their toxins *stimulate tissue resistance* and a *protective serum* is poured out which *produces an inflammatory edema in the cellular tissues* between the firm layers of pelvic fascia and the pelvic organs. This sudden edema occurring within confined areas is the cause of the sudden onset of pain and tenderness. Next the leukocytes hurry to the scene and the binding cells proliferate and form fibrin, all of which compose an exudate in the infected area. As this exudate is poured out following the advance of the infection, it extends along the fascial planes, taking the direction of least resistance and surrounding or imbedding the hollow pelvic viscera. Cellular infection may be found in certain locations within the pelvis, having more or less definite points of origin.

From cervix tears the exudate is usually found in the bases of the broad ligaments and spreads to the walls of the pelvis and around the cervix, running between the fascial planes just as plaster-of-Paris runs in a mold. When extension occurs through the uterus from an endometritis and metritis the infiltrating exudate is usually found near the top of the broad ligaments climbing into the iliac fossæ. In postabortal infections, particularly those following criminal operations, the infection spreads from injuries in the cervix, along the uterosacral ligaments, occasionally infecting the sacroiliac joints which become exquisitely painful. We may also find exudates involving the pericervical tissues spreading out toward the sides of the pelvis and traveling along the ureters to the perinephritic cellular tissue, or anterior to the bladder, behind the pubes and extending up the anterior abdominal wall, along the recti. Section through these inflamed cellular tissues show the lymph channels to be thick, tortuous and beaded. The white-cell infiltration and fibrin exudation solidify the tissue and produce the hardened mass. The veins are thrombotic and the thrombi may undergo pyriform degeneration and by breaking up the débris may get into the blood as infected emboli. On the other hand, the arteries are seldom effected. Consequently, when the scar tissue contracts as a result of organization and resorption, the veins become kinked and pelvic varicosities result. The intraligamentous ganglia and nerves which course along within the folds of the broad ligament, suffer from the formation of this scar tissue, which contracts and produces pelvic pain. The peritoneum of the pelvis, that portion covering the cellular structures, always takes part in the inflammation. A fibrinous exudate is poured out and the tubes and ovaries become matted to the broad ligaments and the uterus and the loop of the sigmoid becomes adherent and partially seals the true pelvis. These exudates within the cellular structures of the pelvis are either reabsorbed or suppurate. If resolution takes place, the exuded fluids are absorbed, the phagocytes attack and digest the fibrin and detritus, or carry them off and the new formed connective-tissue cells make scar tissue. The cicatrices thus produced distort the pelvic organs and limit their motion and their function. If resolution does not take place the process may end in abscess formation, single or multiple, which left to itself sooner or later breaks into the adjacent organs and discharges through the bladder or bowel.\* Tiny pus cavities containing virulent bacteria may remain after the resorption of the surrounding tissues, only to become virulent foci in event of the woman's subsequent labor and play an important part in her sub-



sequent history. These latent foci explain many of the autoinfections mentioned by older writers.

The symptoms of parametritis usually begin on the third or fourth day, yet the writer has seen the symptoms begin as late as the tenth day or even the fourteenth day, following the examination for discharge, where some small wound in the cervix is reopened and ever-present infection enters. Parametritis commonly follows an endometritis, but when the infection passes into the broad ligament, there are certain characteristic symptoms. There may be a chill or chilliness with a rise in the temperature to 103 or 104 and an associated increase in the pulse rate, the pulse rising to 100 or 110 with an associated leukocytosis. Coincidentally, there is marked pain over the region involved, resulting from the sudden pouring out of serum into the cellular structures, swelling the tissues between the fascial planes. Together with this local pain, there are the general manifestations of infection shown by headache, anorexia, restlessness and muscle soreness, and muscular movement causes pain. Nausea and vomiting do not as a rule occur, unless the peritoneum is involved. The patient, though she has a temperature and local pain, does not look seriously ill, as at first resorption does not occur. The fever is at first continuous, then remittent and finally intermittent. Chills and sweats may occur during the defervescence and as the absorption of the exudate gradually takes place, the temperature subsides. Spontaneous resolution is the rule. Our experience at the Long Island College Hospital in a study of over three hundred of these exudates, shows that only about 7 per cent. need incision and drainage, 93 per cent. disappearing spontaneously.

At first the uterus is large, soft and tender, and on either side deep in the flanks there is a marked tenderness on pressure, but relatively little rigidity. *We do not allow vaginal examinations at this time, believing that cellulitis is a protective process and that any manipulation spreads the infection squeezing out the toxins from the over-filled lymphatics.* Later, after the acute symptoms have subsided an exudate may be palpated as a firm wood-like tumor, at the side of and intimately blending with the uterus, or more or less filling the pelvis. The size and location of the exudate determines the displacement of the uterus, as well as the degree of its fixation. If supuration occurs in the mass, certain symptoms and clinical signs manifest themselves. The temperature instead of remaining normal or approximately normal, shows evening exacerbations, the polymorphic leukocytes increase, and the mass instead of being hard and insensitive is sensitive and tender and fluctuant at some point.

The abscess is usually formed by the fusion of many small abscesses and tends to point in the direction of least resistance. This may be into the vagina, the rectum, just above Poupart's ligament, or in the lumbar region below the kidney. Parametritis, whether it ends in resolution or in abscess always leaves behind it maimed organs and tissues. *Perimetritis* or *pelvic peritonitis* are but extensions of metritic or parametritic infections. Endometritis, uterine lymphangitis and pelvic peritonitis is the common sequence and explains the majority of peritoneal infections postpartum, or a parametritis may develop from a tear in the cervix uterus or vagina, and the bacteria reach the pelvic peritoneum without meeting any considerable resistive inflammation in the cellular tissues within the broad ligaments. Or a gonorrheal endometritis may extend by continuity through the tubes to the peritoneum, or a gonorrheal pus tube may rupture during labor, or the pelvic peritoneum may become involved, secondary to an appendicular infection, or secondary to a streptococcus thrombophlebitis. The peritoneum becomes reddened and edematous and *loses its lustre*, and an exudate is poured out. This exudate either organizes, matting the contiguous tissues together, closing the tubal ostia by adhesion of the fimbria, limiting further extension, or because of the overwhelming virulence of the organisms or because of trauma which has reduced the resistance of the tissues, the plastic lymph dies and becomes pus and a peritonitis follows. Hence we find that the sequellæ of an invasion beyond the walls of the uterus through the lymph channels, may result in a parametritis or a pelvic peritonitis which in turn may terminate as a localized pelvic abscess or involve the rest of the peritoneal sac and become a general peritonitis.

The symptoms and signs of peritonitis are more or less dependent on the route by which the infection reaches the peritoneum. When peritonitis follows rupture of the uterus, the symptoms and course are similar to those of peritoneal infection following an abdominal operation on the pelvis, while rupture of a pus sac will give us the picture of an abdominal calamity. The usual mode of entry, however, is by the way of the lymphatics from the endometrium, hence the symptoms of endometritis will, to the alert observer, usually precede those of peritonitis. Pain is a prominent symptom, first in the uterus and lower abdomen, and later spreading over the entire abdomen. Vomiting accompanied by nausea and occasionally hiccoughs, is constantly present if the infection rises out of the pelvis and involves the small intestine. Constipation is the rule. Flatus is not passed, and peristalsis is absent. This paralytic ileus causes

abdominal distention while the decomposition of the intestinal contents produces an autointoxication. Thirst is excessive and the woman is restless. Rise in both temperature and pulse evidence the intoxication. The patient lies on her back with knees drawn up to relieve the abdominal tension. Her expression is anxious her face flushed or pale and gray or subicteric, sunken eyes, cold pinched nose, etc. The tongue at first is moist but soon becomes dry and brown. The urine is reduced in amount and contains albumin casts and oftentimes the bacteria causing the infection. The respiration is rapid and costal in character because of the tympany and pain. The abdomen is tympanitic, tense and tender. The tension and tenderness is at first over the uterus and lower quadrants, but may rapidly spread over the entire abdomen. Deep pressure may be borne without pain, but *suddenly releasing the pressure always causes pain*. The more virulent the streptococcus infection the less tenderness and rigidity. To us, the pulse and tension and return or absence of peristalsis, are the indices of improvement or progression. Recovery can only take place by localization of the process, in which case the pelvic organs and intestines become matted together by plastic lymph or an exudate accumulates in Douglas' pouch involving ovaries and tubes and leaves the woman with her life, but a life-long invalid. *Every labor or abortion which is followed by peritoneal inflammation and recovery will show the presence of a persistent pathology*. If the invasive power of the bacteria is very great, the streptococcus aggresins drive away the leukocytes and quickly invade the lymph channels, and the battle between the streptococcus and its toxins and the patient's leukocytes is transferred to the blood stream where the infection assumes the form of a *bacteremia* in which case the bacteria are found circulating in the blood stream, producing their toxins, which in turn produce a dissolution of the blood, degenerative changes in the organs and the symptoms of rapid general intoxication. The lymphatic form of bacteremia usually develops from an endometritis, the bacteria passing along the lymph channels in the uterus, broad ligaments and into the blood. The vascular form begins as a metrophlebitis in the placental site, with thrombosis in the veins. From these, infected thrombi bacteria get into and multiply in the blood, attacking the serous membranes in the joints and heart. Even a frenum tear may allow a virulent streptococcus access into the blood.

*Symptoms.*—A period of one to three days usually precedes the stormy outbreak. The writer has seen a patient die within forty hours, with seven hundred colonies of streptococci to the cubic

centimeter. The clinical picture is unmistakable. There are usually no demonstrable local lesions. The infection is ushered in with a severe chill. During the rigor, the skin is pale, the lips and finger tips cyanotic, the temperature rises and the pulse goes up to 130, 150 or more. It quickly loses its bounding character, owing to the effect of the toxins on the heart muscle. The red cells are rapidly destroyed, and notwithstanding the high temperature, the patient exhibits a marked pallor. The prostration is marked. The leukocyte count is low but the polynuclears are increased and bacteria are usually found in the blood culture. Endocardial changes are noted within a few hours. The pulse rises higher and higher.

Septic endocarditis usually complicates the severe types of bacteremia. The bacteria settle on the cardiac valves, frequently of the left heart, causing ulcerative processes. Severe chills, continuous fever, rapid pulse and delirium should always suggest endocardial involvement.

Infection of the sacroiliac joints through parametrial infection of the uterosacral ligaments is an occasional late complication of postabortal and puerperal infections. Constant pain in the joint with fever and tenderness on pressure over the joint, make the diagnosis. The pain often follows the course of the psoas muscle into the thigh.

Thrombophlebitis or metastatic bacteremia is sometimes described as a chronic form of sepsis, characterized by repeated chills, high fever, with remissions and intermissions. The origin is either from infection of the thrombi of the placental site in the fundus, or a metrophlebitis with extension along the veins of the broad ligament to the spermatic, hypogastric and iliac veins, or if the placental site is low, as in placenta previa, the uterine veins are first involved, then the hypogastric and internal iliac, or the femoral may be involved, causing a phlegmasia alba dolens. There is often a periphlebitis of the cellular tissues about the veins. The uterus commonly shows changes resulting from bacterial invasion, in the form of an endometritis or metrophlebitis. Involution is retarded. The red lochia persists. The streptococcus is the commonest invader. The symptoms seldom occur before the eighth day and may appear as late as three weeks after delivery. The local symptoms of a uterine infection commonly precede the development of thrombophlebitis, or this process may have subsided except for a slight evening elevation of temperature, a persistently rapid pulse, and lochia rubra when chill and sudden rise of temperature usher in the disease. The initial chill is a constant forerunner. This is followed



by high fever, the pulse rises with the temperature, and defervescence is accompanied by a profuse sweat. Intermission of the fever, even to subnormal, and a corresponding drop in the pulse, and another rigor may follow in a few hours or the next day. The chills are repeated daily for a variable length of time. In the severer forms of infection there are fewer chills, for each chill indicates that a bit of infected thrombus has broken or that a fresh supply of bacteria has entered the blood. The bacteria are only found in the blood stream during the chill. The temperature is irregular and the pulse curve follows the fever, and a leukocytosis is evident. The disease is progressive, though each extension of the thrombus may be regarded as another attempt to isolate or confine the infection. Metastases occur in the lungs, joints, kidneys, etc. The diagnosis is made on the time of occurrence, repeated chills, sweats, and a zigzag temperature in the second week. Vaginally, the uterus may be normal or enlarged, soft and slightly tender. The fornices at one or both sides may be found swollen and sensitive, and the thrombosed veins may be felt as solid worm-shaped cords. Examination always excites a chill and elevation of temperature.

Phlegmasia alba dolens is a thrombosis of the saphenous and femoral veins, or of the pelvic and cervical veins, or of both combined, occurring late in the puerperium. The patient experiences sudden pain in the groin or in the calf of the leg. The pain is so great that the leg is immovable, the thigh becomes swollen, is white and opalescent, is hot to the touch, exquisitely sensitive, and pits on pressure. The superficial veins enlarge. There is fever and a rise in the pulse rate. One or both limbs may be involved although the disease commonly begins in the left. Gradually after weeks or even months, a collateral circulation is established and the edema and swelling subside, or there may be abscess formation. These foci are apt to appear in the scarpas space or in the calf of the leg.

*Treatment.*—The prophylactic treatment of puerperal sepsis includes the proper sterilization of hands, instruments and approaches to this great puerperal wound, and the education of the pregnant woman in marital abstinence in the latter weeks of pregnancy, for it must be realized that all inside of the uterus is sterile at the time of labor or abortion, if such labor or abortion is spontaneous, until it is contaminated with bacteria from the outside. In such a company as this, it is needless to repeat or to speak of the technic or conduct of labor save to say that all cases should have the vulva properly prepared before any vaginal examination is made, and *no* vulva is properly prepared unless the vulval hair is removed.

Second, in our clinic, we have found that infection is directly proportionate to the number of vaginal examinations, hence I wish to enter a plea for the conduct of labor by rectal and abdominal examinations.

Curative treatment is based on the proper recognition of the natural pathology, which must be given its place, for if we admit and we must, that the interior of the uterus is the principal port of entry for bacterial infection, and that its interior, if left to itself, undisturbed by interference or trauma, is, except in the presence of the most virulent bacteria, competent to defend the uterus against the invading organisms, we can see the fruitlessness and fallacy of intrauterine manipulation, either by cureage or irrigation. In our own clinic we have not been slow to take up and try out each of the successive suggestions which have been made for the treatment of primary endometritis, whether putrid or coccal. The amount of material at our hand, in the services of the Long Island College Hospital and the Jewish Hospital, has afforded ample opportunity to convince us that uterine drainage is the one contributor to the normal uterine reaction against bacterial invasion. This *can* be accomplished by proper postural methods and retraction of the uterus. Notwithstanding my many unconvinced auditors here in Manhattan, the Fowler's position, when properly used and supplemented by emptying the vagina by having the patient turn and lie upon her abdomen, and stimulation of contraction and retraction by the use of the ice-bag over the fundus and the administration of pituitrin and the ergot derivatives, does attain this better than any form of irrigation. The single exception in our experience has been in premature deliveries which have been accomplished by vaginal hysterotomy, where the cervical canal has been closed by sutures and its lumen constricted. Here we have found that the method originally suggested by Caroso and perfected and employed by Ill of Newark, which consists of the introduction of a large rectal tube into the uterus, with strips of gauze loosely packed about it, the ends of which are brought out into the vagina, and irrigation through this tube with a 50 per cent. alcohol solution, at stated intervals, has promptly relieved this uterine stasis. In no other class of cases have we ever found it necessary to adopt this plan. After the bacteria have passed out of the uterus, into or through the myometrium, and have entered the lymphatics or blood-vessels, it is evident that no form of local treatment within the cavity of the uterus can have the slightest effect, except to push them further along, and squeeze their toxins into the general circulation. As I have shown by the

pathology, lymphatic invasion either ends in a parametric exudate which is definitely conservative and protective, or in a pelvic peritonitis, which if confined to the pelvis by proper treatment, is just as conservative as the parametric exudate, or the bacteria pass into the blood, producing a bacteremia in which local treatment can have no effect. Hence in parametric invasions, our plan is entirely expectant, particularly if this exudate is found in the lateral parametria. Here we disagree with Cullen as we find that incision and drainage only prolongs the reparative process. In pelvic peritonitis and perimetritis, when localization can be obtained by posture, morphine, ice and the avoidance of catharsis and the maintenance of the secretory function by the Harris drip, we follow the expectant plan, but if the pelvic peritonitis or perimetritis shows evidence of extension, we feel that a wide culdesac incision and isolation of the pelvis with gauze, such as advised by the late Dr. Pryor, in conjunction with the Fowler position and the continuance of intestinal quiet with morphine and ice, will frequently confine the infection to the pelvis and prevent extension to the general cavity.

Bacteremia depends for its care on Nature's resistance to the bacteria and their toxins. Consequently, the whole treatment hinges on our ability to make the fight. Fresh air, sunlight, food and supportive stimulation sums up the therapy. The sera and vaccines have each had a thorough trial and have been discontinued. To sum up, the treatment depends, first, on an accurate diagnosis, second, on appreciation of Nature's resources, third, coöperation, with these, and fourth, evacuation of the local collections of pus.

If a general peritonitis develops in a puerpera, there is no treatment which affords much in a curative way. Incision and drainage, supplemented with posture, proctoclysis and the arrest of peristalsis with morphia, has given practically no better results than the expectant plan. Altogether fifteen cases have been studied. Seven were operated, with five deaths, and eight treated by posture, lavage, proctoclysis, hypodermoclysis, morphine, etc., with six deaths. Many patients fail to localize the infective process in the pelvis, owing to the energetic measures employed by the attendant. We have learned by bitter experience that puerperal and postabortal infective processes are actually extended by manual and instrumental manipulation. This is especially so in thrombophlebitis of the pelvic veins. In the consideration of thrombophlebitis again comes up the question of operation versus general supportive treatment; the indications and the proper time to operate are phases of the subject open to discussion. The admirable presentation of this subject

by C. Jeff. Miller of New Orleans brings out these points. First, that the diagnosis of pelvic thrombophlebitis must be made by the history and the clinical picture, *i.e.*, recurrent chills with high temperature and pronounced remissions, rather than by actual palpation of the thrombosed vessels. Second, there must be an absence of exudates and of peritonitis and the uterus must be empty and involuted. Early operation by the transperitoneal route gives the best prognosis. Third, both iliacs should be ligated with the least possible manipulation, and finally the uterus should not be removed. The fresh air treatment has saved four out of six cases in our clinic. Repeated transfusion improves the patient's resistance.

Phlegmasia alba dolens needs little but postural management and elastic support. This, with codein or morphine for the pain, the internal administration of citrates and time will meet the demands of treatment; occasionally an abscess will form in Scarpa's space or at the bifurcation of the popliteal which may need incision and drainage. Briefly, the treatment of puerperal pelvic infections demands a proper appreciation of the pathology and clinical course of the individual lesion.

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## RESULTS OF BLOOD PRESSURE OBSERVATIONS IN 447 CASES OF PREGNANCY.

BY

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DURING the last few years there has grown up around the question of blood pressure in pregnancy a rather abundant literature. A number of very careful observers have recorded the results of the study of series of cases involving in some instances considerable numbers and have added them to the total volume of data at present available upon the subject, so that at present we have a fairly concrete idea of the value of the observation of arterial tension.

It is not with the idea of adding anything new to the observations already recorded that this series of cases is reported, but merely for the purpose of adding another series to those on record. The data which I have been able to collect, include first a series of 115 private patients and second, the observations of blood pressure upon 332 patients entering the maternity of the Evanston Hospital



upon whom blood-pressure observations were made always upon entrance and with but few exceptions, immediately after delivery.

Upon the first series of 115 private cases, a total of 608 observations were made, the number of observations upon individual cases varying from one to seventeen. Practically all of the cases in this series had at least several observations. The ages of these women varied from twenty-two to forty-three. As far as possible a routine observation of blood pressure and a urine examination was made every two weeks until the last month, after which the observation was made once every week. In almost all of these observations a mercury instrument and arm band of standard width were used. In a small number of cases the Tycos aneroid instrument was employed. The average systolic pressure calculated from the total number of observations made upon all these cases was 114.

Of this series only one case gave an average pressure of under 100, the pressure in this case being 93. Forty-three cases gave an average of between 100 and 110, the average pressure for the 43 being 107. Forty-eight cases gave an average pressure between 110 and 120. The average pressure of the 48 was 114. There were 26 cases which gave an average pressure of over 120. The average for the 26 was 129. There were 24 cases in the series whose ages varied from 30 to 43. The average pressure of the 24 was 121.

There has been some difference in the results obtained by different men who have made observations as to blood pressure during pregnancy. Wallich and Judd find that the tension during pregnancy is increased. Haussling, taking 682 systolic pressure readings on 140 patients, obtained an average reading of 113. Every writer upon the subject agrees that a rising pressure is to be looked upon as an evidence of oncoming toxemia. Coincidentally with the observations made upon this series of 115, the blood pressure was taken upon entrance to the hospital in 332 cases. In almost all of these the pressure reading was taken immediately after delivery. Of those who entered the hospital with a pressure below 140, 245 cases, the average pressure upon entrance was 119. Of 208 of these same cases in whom blood pressure was taken immediately after delivery, the average pressure was 116. In 65 cases which entered the hospital with pressures varying from 140 to 210, the average pressure upon entrance was 156. In 59 of these same cases in whom a pressure reading was taken immediately after delivery, the blood pressure was 136. In all cases in whom the pressure was 140 or more, the histories were carefully looked up and letters were addressed to their attending physicians in case these were not men who were regularly

in attendance at the hospital, in order to find out what the previous history of these cases had been. In some of these the blood pressure had not been observed previous to entrance, hence it was impossible to obtain any data upon this point. In a considerable number where the blood pressure had been carefully observed, it was found that it had been quite normal during pregnancy and up to within a short time of labor. In these cases therefore it would seem that the pressure rose during labor and that we were dealing with a hypertension incident to labor. This agrees with the observation of Lynch that labor causes a rise in arterial tension. Every case of true toxemia which entered the hospital during the time these observations were being made, came in with an elevation of blood pressure with one exception.

This case was one of a woman of twenty-four, primipara, who had been under the observation of the writer from the fourth month. She had been very conscientious in coming in for observation of her blood pressure at intervals of two weeks, at which time she had also always brought a sample of urine. Both had been entirely normal all the way through pregnancy, the last observation having been about three days previous to admission to the hospital in labor. She entered the hospital with a blood pressure of 120. The sample of urine obtained immediately upon admission showed a faint trace of albumin by the nitric acid test. Mentally she seemed perfectly normal, had no headache, abdominal pain, edema, or visual disturbance or any other evidence of trouble. The position of the child was normal and heart tones were perfectly good. She was progressing with what appeared to be a perfectly normal first labor. After being in labor about eight hours she got up from the bed to empty the bladder, and toppled over unconscious. When seen immediately afterward she was cyanotic, stuporous, heart tones could not be heard, and in a few minutes she had a severe convulsion. As dilatation was almost complete she was taken to the labor room, dilatation rapidly completed and delivered with axis-traction forceps of a dead child. She made an uneventful recovery but persisted in showing a trace of albumin for many weeks. This is the only case which I have had the opportunity of observing in which eclampsia has come on without increase of blood pressure. Dr. DeLee in conversation informed me that he had had one case in his experience in which eclamptic symptoms had first come on during labor without any evidence of its imminence during pregnancy. A search of the literature however reveals the fact that such cases have been observed several times.

An observation of this sort is of value in that it warns us that eclampsia may not invariably be prevented, for the very good reason that in these exceptional cases we cannot know that it is going to occur. It does not detract in the least from the extreme value of blood-pressure observations which, except in very rare cases, will foretell the onset of toxemia.

While it is not possible to make a dogmatic statement of the precise altitude to which the pressure may rise without being dangerous it has been assumed arbitrarily that 140 may be looked upon as the suspicious point and that any pressure of 160 or more is to be regarded as dangerous. This classification was first made, I believe by Newell of Boston, who published a paper based upon the observation of 490 cases about two years ago. These observations should, of course, be accompanied by a careful observation of the urinary condition.

Not only should the mere presence of albumin be noted but a quantitative estimation should always be made in any case in which its appearance is accompanied by rise of pressure. Any case in which the pressure rises to 140 should be subjected to careful observation, the observation being made at intervals closer together than every two weeks, preferably every four or five days. Quite often it will be found that the use of a saline every morning together with a diet restricted to milk, cereals, cooked vegetables and abundant water and a daily sweat bath will be sufficient to reduce the pressure.

Those cases in which the pressure does not come down but on the contrary continues to rise present a more serious problem. In the series of cases here reported, if the patient was a private patient of the writer or in the ward service of the hospital, she has been kept under the strictest observation and preferably in the hospital. Blood pressure observations were made at least once a day and total urinary output has been noted daily with daily estimation of total solids, urea, albumin and microscopic examination.

If, under the influence of absolute rest and restriction of diet, the pressure declines, we have allowed the cases to continue without interruption, under careful observation. This we have done particularly in cases in which the pregnancy had not yet advanced to the beginning of the ninth month. After that time but little is gained by attempting to carry it on after the pressure reaches the dangerous altitude. One should keep in mind the fact that in attempting to continue the pregnancy in the interest of the child, that the child partakes of the toxemia and that a woman who is

allowed to run into danger for the purpose of affording the child a better chance for survival often carries her child into danger with her, for the child cannot escape the toxemia which affects her.

It has not been intended to enter into any discussion of the toxemia of pregnancy but merely to report briefly the blood-pressure findings on this series of cases. I believe that the observation of blood pressure is by all means the most important single observation which can be made upon a pregnant woman so far as the question of guarding her from toxemia is concerned. It has frequently been noted that a rise of blood pressure has preceded the appearance of albumin.

While we must admit that even in most careful hands an occasional case of eclampsia may occur, still by carefully and conscientiously making blood pressure as well as urinary examinations regularly, and sufficiently frequently, a great majority of women may be spared this serious complication.

#### CONCLUSIONS.

1. The average blood pressure of the pregnant woman is less than that of the nonpregnant.
2. Labor causes in many cases a rise of arterial tension.
3. Toxemia of pregnancy is accompanied by a rise of blood pressure except in very rare instances and this rise usually precedes other symptoms.

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BLOOD TRANSFUSION (CITRATE METHOD) IN  
HEMOPHILIA NEONATORUM.\*

BY

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ONE of the most gratifying fields for the use of blood transfusion is the treatment of bleeding in new-born infants, so-called hemophilia neonatorum. This condition is often called melena neonatorum, as hemorrhages from the bowels are encountered in the great majority of the cases. However, bleeding may occur from the umbilicus (omphalitis hemorrhagica) or following a circumcision, without intestinal hemorrhages.

The name hemophilia neonatorum is not a very appropriate one, because these infants are not hemophiliacs in the true sense of the word. True hemophilia, usually occurring as a family disease, is never permanently cured by blood transfusion. The underlying abnormality of the hemophiliac blood is not changed by transfusion.

On the other hand, the abnormality of the composition of the blood, which causes the bleeding in the new-born, is absolutely cured by a single transfusion. These infants grow up as perfectly normal individuals and do not show any tendency to bleeding in their later life. In other words transfusion in hemophilia neonatorum is not only life-saving in replacing the loss of blood, but absolutely curative for the underlying disease.

The real cause for the bleeding in these new-born infants is not known. For obvious reasons it is practically impossible to get a sufficient amount of blood for a careful study of its chemistry. These little babies are so exsanguinated, that it is not advisable to further deprive them even of 5 to 10 c. c. of blood. Moreover they have such a small quantity of blood left in the vascular system that even after inserting a cannula into a vein, sufficient blood for accurate chemical study cannot be obtained.

It might be assumed, from a theoretical point of view, that among different bloods available (father, mother, other relatives, professional donors) the mother's blood would be absolutely contra-

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indicated for the cure of the disease. The whole intrauterine existence of the fetus has been based upon the mother's blood. It might therefore seem a very logical conclusion to use any other donor in preference to the mother. Such an assumption, however, is not warranted by facts. It has been proven beyond doubt in a great many cases that the mother's blood is just as efficient as that of any other donor. Evidently some substance of the mother's blood (calcium, prothrombin, thrombokinase) is not transmitted into the placenta. This abnormality is the cause for the bleeding of the new-born.

The mother should be used as a donor in every case of this type for the following reason: Cherry and Langrock<sup>(1)</sup> have shown that the mother's blood can be used safely without hemolytic tests for new-born infants, whereas the father and other blood relatives require a careful test to prevent hemolysis and agglutination. This observation is of the greatest practical importance, because, as stated above, it is almost impossible to obtain sufficient blood from the baby for the necessary tests. Furthermore, these cases are usually extremely urgent, and with the mother always available, valuable time is saved.

My personal experience in hemorrhage of the new-born comprises eight cases. Six of these were permanently cured by a single transfusion.

The method applied was the citrate method which I have already described in detail in a series of papers. I shall therefore refrain from stating the technic of this method which is well known and extensively used at the present time. The mixture of the blood with a minute amount of sodium citrate (0.2 per cent.) prevents coagulation of the blood during the transfer from donor to recipient.

The small amount of sodium citrate used, even in large transfusions, is absolutely non-toxic. The citrate method can be safely used in new-born infants. No reaction or chill occurred in any of the cases of this group.

The citrate method is far superior to any other method of blood transfusion in the treatment of hemophilia neonatorum on account of its great flexibility. These little infants are usually brought to the hospital by the father on the second day after their birth. A member of the house staff is sent to the patient's home and returns with 100 c.c. of citrated blood taken from the mother.

A superficial arm vein in the elbow region of the baby is then exposed by a very small incision. The blood, heated to body temperature by immersion in warm water, is introduced through a fine

TABLE OF CASES OF HEMOPHILIA NEONATORUM.

No.	Date	Age	History	Status	Procedure	Result
1	Aug., 1915	20 days	Bleeding from umbilicus ever since birth.	Extreme anemia. Wassermann. ++++	80 c.c. of citrated blood taken from father. Injected into external jugular vein.	Immediate cessation of bleeding.
2	Mar., 1916	6 days	Intestinal hemorrhages since birth. Repeated injections of serum ineffectual.	Extreme anemia.	120 c.c. of citrated blood taken from mother. Injected into arm vein.	Immediate cessation of bleeding. March, 1918, child perfectly well.
3	May, 1916	4 days	High forceps delivery. Convulsions. Profuse bleeding from umbilicus and vagina.	Bleeding time 17 min. Coagulation time 12 min. Severe anemia.	100 c.c. of citrated blood taken from mother. Intramuscular injections.	Immediate cessation of bleeding. Reëxamination, March, 1918, child perfectly well.
4	May, 1916	2 weeks	Ritual circumcision 24 hrs. ago. Continuous bleeding since. Suture, thromboplastin, injection of serum ineffectual.	Extreme anemia.	120 c.c. of citrated blood taken from mother and injected into superficial arm vein.	Immediate cessation of bleeding. Baby sent home. Two weeks later profuse intestinal hemorrhages. Taken to another hospital. Died without another transfusion.
5	Dec., 1916	3 days	Cyanosed at birth. Difficulty in starting respiration. Tongue pulled forward. Laceration of tongue. Has been bleeding from tongue since. Bleeding from rectum for twelve hours.	Severe anemia.	Tongue sutured. 100 c.c. of citrated blood into arm vein, (donor-father).	Immediate cessation of bleeding. Reëxamination, March, 1918, child perfectly well.
6	Mar., 1917	2 days	Intestinal hemorrhages since birth.	Extreme anemia.	100 c.c. of citrated blood taken from mother. Injection into superficial arm vein.	Immediate cessation of bleeding. Reëxamination, March, 1918, child perfectly well.
7	Oct., 1917	2 days	Subcutaneous hemorrhage. Intestinal bleeding.	Hematoma of scalp and neck. Sclerema neonatorum. Melena. Hemophilia.	100 c.c. of citrated blood taken from mother. Injection into superficial arm vein.	Arrest of hemorrhage. Returned to hospital 3 weeks later with large hematoma of scalp. Transfusion (Unger method). Died.
8	Jan., 1918	2 days	Bleeding from bowels since birth.	Severe anemia.	100 c.c. of citrated blood taken from mother. Injection into superficial arm vein.	Immediate arrest of hemorrhage. March, 1918, baby perfectly well.



cannula. In using this method it is unnecessary to expose the external jugular vein or introduce the cannula into the longitudinal sinus.

Welch(2) suggested in 1910 the subcutaneous injection of serum as a cure for hemophilia neonatorum. This procedure, however, is not as efficient as blood transfusion. My records show that in a number of cases transfusion stopped the bleeding immediately and permanently when previous injections of serum had not effected any diminution of the bleeding. Serum and intramuscular injections of blood may be tried, as they seem to stop the hemorrhage in a certain percentage of the cases. However, if bleeding recurs, blood transfusion should be immediately resorted to.

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- 565 PARK AVENUE.

### THE CONSERVATIVE TREATMENT OF THE DISPLACED UTERUS.\*

BY

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FOR the past few years the writer has been doing less abdominal surgery each year for the relief of displacements of the uterus, confining his surgery to the vaginal tract, and endeavoring to restore the uterus to its normal position in the pelvis by support from below rather than by suspension from above. By keeping out of the peritoneal cavity the delicate serous membrane has not been traumatized with the subsequent formation of adhesions, and although the displacement may not be entirely corrected, the motility of the uterus has not been curtailed and the subjective symptoms have been markedly relieved. Frequently displacements occurring in women who are aged and infirm or neurasthenic have been corrected by the aid of surgery done in the office without anesthesia, either general or local, and without the confinement of the patient to her bed either before or after the operation.

We have found that the movable retroverted uterus generally gives rise to no immediate symptoms and requires no treatment unless it be also prolapsed. If the subjective symptoms of which

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the patient complains be due to the retroversion of her uterus a properly fitting rubber pessary introduced within the vagina, will often give the patient relief. We are careful in the introduction of the pessary, that it does not convert the retroversion into a retroflexion, and special care should be exercised in this regard in the replacement of the retroverted uteri with large bodies following abortion or labor. In these subinvolted uteri, we have found that if the patient persistently sleeps in a modified Sims position at night, the retroversion will gradually disappear. This position also favors drainage from the body of the uterus. If the uterus be retroverted and not freely movable an abdominal section is done followed by appropriate interabdominal treatment.

The retroflexed uterus is often the cause of menstrual pain and also of sterility. If the retroflexed uterus has a long cervix either intact or torn, a high amputation of the cervix will convert the retroflexion into a retroversion and eliminate the dysmenorrhea, but will of course make conception difficult and favor subsequent decensus of the uterus. The amputation of cervix may be done in the office without an anesthetic, provided the caliber of the vagina be of fair size and the uterine ligaments be sufficiently elastic to allow the cervix to be brought down to the entrance of the vagina. Cutting instruments should be sharp and particular care should be exercised that all blood-vessels are thoroughly ligated. In cases of retroflexion causing sterility we cut through the angle of flexion between the body and its cervix, by introducing a knife into the cervical canal, and after the application of 50 per cent. tincture of iodine to the lining endometrium of the body of the uterus as well as to the endometrium of the cervix, a stem is introduced to be worn for several months, to prevent a recurrence of the retroflexion. A large number of cases of retroflexion may be relieved by vaginal surgery done in the office without an anesthetic. In those cases of retroflexion requiring an abdominal section for the permanent replacement of the uterus, we do as little intraabdominal surgery as is compatible with the replacement of the uterus. This is generally a modified Coffey round ligament operation or even a ventrosuspension, being careful that the uterus be not fixed to the anterior abdominal wall, that the peritoneum be not traumatized by rough handling, sponging or instrumentation. If these precautions be not observed we have postoperative adhesions interfering with the motility of the uterus, and giving rise to symptoms more troublesome to the patient and more difficult to relieve than were the original symptoms caused by the displacement of the body no its

cervix. All retroflexions accompanied by extrauterine pathology require interabdominal surgery.

The anteфлекed infantile uterus of the young unmarried woman is often best left alone. For the past two years we have been using extracts of the internal secretory glands, for these cases of maldevelopment of the uterus and in some cases with seeming benefit. If the anteфлекion be marked, and the woman desirous of bearing children, the angle of flexion between the body and the cervix is obliterated by incision with a knife, and after iodination of the endometrium of the cervix and of the body of the uterus, a self-retaining stem is inserted. Except in cases where the caliber of the vagina is much contracted, this work may be done in the office, without an anesthetic, provided the patient has confidence in the operator and in his ability to do the work without causing an undue amount of pain.

There are four important factors in the etiology of the uterine prolapse. First, deviation from the normal angle between the long axis of the uterus, and the long axis of the vagina. Second, the weight and contour of the uterus. Third, relaxation of the ligaments of the uterus. Fourth, relaxation of the fascial walls of the vagina, increasing the width of the vaginal canal. The caliber of the vaginal canal at its outlet has very little to do with descent of the uterus; a complete tear into the rectum will often cause no prolapse of the uterus, whereas a relaxation of the fascia in the middle portion of the canal, even in cases where the women have never borne children, will result in a marked prolapse of the uterus. The upper portion of the canal should not be narrowed, or the cervix will not find its normal resting place in the hollow of the sacrum.

Slight degrees of prolapse give rise to no subjective symptoms and require no treatment. In second degree prolapses of the uterus, we frequently find it advisable to amputate the lower portion of the hypertrophied cervix and after the tenderness incident to the operation has disappeared, to insert within the vaginal canal a pessary with an exaggerated uterine and pubic curve. If the patient has a distaste for an anesthetic and subsequent confinement to her bed, or if she be aged, or infirm, this work may be done in the office without anesthesia, and with but little discomfort to the patient. If the uterus be markedly prolapsed with an elongated cervix, we first remove a portion of the cervix. There are two reasons for this. First, that the contour of the vaginal portion of the uterus may more nearly conform to the normal uterus and so rest more readily in the hollow of the sacrum, and second to reduce the weight of the uterus. While amputating the cervix the anterior flap is dissected sufficiently

high, so that the lower portion of the perimetric tissues are identified, loosened from their attachments at the sides of the uterus and stitched with No. 1 chromic catgut to the front of the remaining upper portion of the cervix. Care should be taken to keep close to the cervix so that the bladder is not injured. This procedure will bring the remaining upper portion of the cervix and the lower part of the body of the uterus well back into the hollow of the sacrum. The caliber of the vaginal canal is made smaller by dissecting the mucous membrane lining of the posterior vaginal wall free from the fascia posterior to it for a distance of from 2 to 3 inches upward from the outlet of the vagina and then stitching together the fascia in the posterior wall of the vagina with a continuous suture of No. 2 chromic catgut. The first two or three stitches, beginning from above, should take deep bites in the fascia, so that the vaginal canal is most constricted some 2 inches above the outlet. The mucous membrane lining of the posterior wall of the vagina is then allowed to fall back against the fascia to which it unites without suturing and serves to protect the catgut sutures in the fascia from the acid secretions of the vagina. In marked cases of procidentia of the uterus with relaxed ligamentous and fascial support, occurring in women past the child-bearing period, we have found it advisable in addition to this vaginal surgery, to open the abdomen and fix the posterior surface of the body of the uterus to the anterior abdominal wall with chromic catgut sutures.

To summarize: The displaced uterus may give rise to no subjective symptoms and require no treatment.

The anteфлекed and retroфлекed uteri frequently are amenable to surgery, done in the office, without anesthesia.

Moderate degrees of prolapse may often be relieved by removing the lower portion of the hypertrophied cervix and the replacement of the remaining portion of the cervix in the hollow of the sacrum by the use of a pessary.

This work may also be frequently done without anesthesia and subsequent confinement of the patient to her bed.

If an abdominal section be necessary for the proper replacement of the uterus, extreme care should be exercised not to traumatize the peritoneum, that adhesions may not form subsequently to restrict the normal motility of the uterus.



## THE INDICATIONS, DANGERS AND CONTRAINDICATIONS OF UTERINE CURETMENT.\*

BY

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THAT the ancients held the sexual organs of the woman more or less sacred is indicated by the name "sacrum" given to one of the chief bones protecting these structures. Modern civilization in its race suicide, with its common self-induced and criminal abortions, regards with too little sanctity these organs or their sacred functions. The various practices to thwart the normal functions of the pelvic organs is referred to by the Orientals as the "crime of the white race."

Because, however, so often in the legitimate, honest, and sincere practice of our profession, there is frequently grave and fatal injury done by careless, ignorant or unskilful invasion of the uterine cavity—for this reason I consider it worth while to present briefly a consideration of the familiar subject of uterine curettage. The term means simply a scraping of the uterine mucosa. Because it is sometimes such a simple and easy procedure, and because of the erroneous view held as expressed by "It can do no harm and may do good"—because of this attitude, manifold abuses have been committed with the curet.

Recamier invented the curet about 1845, and some twenty years later the sharp curet was introduced by J. Marion Sims. The operation has become far too frequent. Reed says, "The curet is often used unnecessarily, and great caution should be used in its employment."

Curettage in any given case is done for either diagnostic or therapeutic purposes, or for both purposes in the one procedure. The indications are in two clinical classes of cases, namely, nonpuerperal and puerperal.

By far the most frequent indication for curetment is so-called chronic endometritis. In these cases the endometrium is soft, thickened, the glands enlarged, perhaps localized, fungoid, or poly-

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poid outgrowths present. On the other hand, there is an atrophic endometrium, thin, the glands being largely destroyed as observed especially in senile conditions or in the rare cases of pyometra. For these conditions, the sharp curet employed in the thorough removal of the diseased endometrium is, it is generally agreed, the treatment par excellence. The condition may frequently be traced to a gonorrheal or puerperal infection, the result often of an insidious onset of the former or of a persistence of an acute infection of the latter. There are many other contributing causes. In a small proportion of the cases, constitutional affections such as tuberculosis, anemia, lithemia, and gout. In a very large percentage of cases some local congestive factor is prominent, and is believed by many to be the frequent cause of the development of the condition, or at least of its persistence. Among these causes may especially be mentioned neoplasms of the uterus or ovaries, uterine displacements, subinvolution, tubal disease, lacerations of the cervix and perineum, suppressed menstruation from exposure, cervical stenosis, constipation, sexual excesses, unhygienic dress.

This condition of the endometrium, generally manifesting itself by leukorrhea, menorrhagia and metrorrhagia, sometimes pain, sterility, or abortion, is generally amenable to thorough curetment, provided at the same time, the causative factors be removed. And herein often lies great folly or the danger of grave harm. Of what avail is the curetment of a displaced uterus, if at the same time the displacement be not corrected? "Come let us curet," is often said and done in the presence of an unrecognized pus tube, or pelvic abscess. Result, kindling of a smoldering fire into a consuming conflagration of general septic infection or of peritonitis. The uterus should seldom be curetted in the presence of a neoplasm, a displacement or laceration, never in the presence of a pus tube, pelvic abscess, pelvic peritonitis, or an ectopic pregnancy, unless the procedure, in all cases, be followed immediately by surgical treatment of the accompanying lesion. This is one grave danger I wish to emphasize. The following experience will illustrate:

A few years ago a physician, a friend, capable in many medical matters, but not skilled in gynecology, asked me to give an anesthetic that he might do curetment for a bad leukorrheal discharge. I asked him if he had excluded pelvic inflammatory disease. He answered in the affirmative, and I said no more, though secretly hoping that he would ask me to examine the patient. From the history, including an abortion within a comparatively short time, I was suspicious of tubal disease. The sequel—pelvic peritonitis, a

desperately sick patient, finally subsidence of the acute condition, and later, abdominal section for pus tubes. Smoldering embers of infection had been stirred to a fire.

Of the other nonpuerperal types of endometritis, gonorrheal infection would seem to merit especial consideration. Few authorities now advocate curetment of acute cases. Ashton, however, in all gonorrheal infections limited to the uterus practises wide dilatation, thorough curetment, and the application of pure carbolic acid followed by alcohol. C. C. Norris says, "The treatment of acute gonorrheal endometritis is mainly expectant." He depends largely upon diet, recumbent posture, and local vulvar and vaginal cleanliness, and it would seem that a very large proportion of gynecologists take the same rational conservative position.

Lawson Tait condemned the cureting of an acute gonorrheal endometritis. Regarding the treatment of chronic gonorrheal endometritis, Norris says, "If after a course of hot fomentations and vaginal douches extending over a period of at least six weeks, together with local treatment for gonorrhea of the cervix, if then the symptoms still point to an intrauterine infection and show no signs of abating, the patient should be anesthetized, and, after a careful pelvic examination to exclude the possibility of adnexal complications, a thorough dilatation and curettage of the uterus and cervix, under strict aseptic and antiseptic precaution, should be performed. Following, the cavity should be wiped dry and tincture of iodine, nitrate of silver solution, or carbolic acid should be applied." This seems sensible ground, and with it I believe a large majority of the profession will agree. If tubal involvement has been excluded, the danger of causing extension of the infection is almost nil, whereas, there is a fair chance of ridding the uterus of the malady.

There is a large class of cases which are of great concern to the general practitioner as well as to the obstetrician and gynecologist. They are common, troublesome, and often serious. Puerperal conditions are the ones especially in mind, namely: abortions, spontaneous or induced, many criminal in character, incomplete or even those sometimes so-called complete abortions. Infections following labor are also included. I believe that all cases of early abortion, whether incomplete or apparently complete, would be the better for an exploration of the uterine cavity, provided it may be done soon after the occurrence of the abortion. This, with general anesthesia under careful aseptic conditions, should include free dilatation, if not already present, introduction of gloved finger, or fingers, digital curetment and completion of the process by thorough

curettage. This is a prophylactic agent against decomposing foreign matter, removes the excess of decidual tissue, minimizes hemorrhage and promotes healthy, prompt involution of the organ.

In contrast, there are many such puerperal cases seen late, untreated, carelessly treated, or mal-treated, some intrauterine manipulation already having been done by patient, mal-practitioner or kind friend, or even by a physician; cases when first seen already bear evidence of infection. Such terminal conditions, whatever the advancement of pregnancy, are often spoken of as putrid or septic endometritis or, with the constitutional condition in mind, as puerperal toxemia, or septicemia. In the presence of such a case, manifesting fever, rapid pulse, and various variable local symptoms, as regards the lochia, etc., what is the course to be pursued? No authority that I have observed has the temerity to give definite fixed rules of procedure in such cases. Each case must be treated upon its own merits. The impulse is to explore the uterine cavity with the purpose of assuring ourselves that it is free from remnants of placenta, blood-clots, or portions of membrane. Were it practicable to determine that only sapremic germs were present, or that pathogenic germs present had not invaded the uterine tissues, there would be no doubt as to the advisability of such an exploratory procedure. Sometimes the patient when first seen already has the anxious, pained, apprehensive facies, the abdominal distention and tenderness of general peritonitis that says "surgical hands off." Streptococci may be found in the blood with a similar warning, or, again, by careful, gentle, vagino-abdominal examination tubal or broad ligament involvement may be demonstrated. This with the same warning note of noninterference with the uterine cavity. If, however, such serious involvement can be reasonably excluded, if the discharge be free and of foul character, and especially if foreign material may be felt through the patulous os, the uterus, employing general anesthesia, should be explored with the fingers, extraneous matter should be broken up and turned out, the cavity flushed out thoroughly, very gently using, if need be, a dull flush curet as an aid. In a large percentage of cases the result is most satisfactory and gratifying in the prompt convalescence of the patient. As illustrating the most serious infective type was a patient referred to me ten days ago. When she entered the hospital she had unmistakable signs of general peritonitis. The history was one of probable recent abortion with subsequent persistent bleeding. Her physician, a very excellent practitioner with considerable experience in obstetrics and gynecology, had curetted the uterus with the result of rapidly de-



veloping peritonitis. He said to me, "I wonder if I perforated the uterus?", implying the possibility of such an accident. Barring this accident, two or three other pertinent questions, as to this case, arise. Through bad technic in the home of the patient, was infection introduced at the time of curetment, or did the curet simply scrape away the defensive barrier of leukocytes and thereby open the door for the free admission of microörganisms already present? The doctor, my confrère, was, I fear, disappointed because I refused to curet the uterus, but it surely would have only hastened the death of the patient to have done so. This case presents a concrete clinical warning of some of the dangers and contraindications of uterine curetment. It is not cited with a spirit of harsh criticism, but with a charity born of mistakes frequently observed and sometimes may be unhappily made.

Montgomery reports that, "During five years, in the gynecologic wards at Jefferson Hospital, 296 patients were admitted under the designation of incomplete abortion. The great majority of these patients were suffering with symptoms of infection on admission. In many of them infection was well advanced and the condition practically hopeless. Many of them had undergone curetment prior to entering the hospital. Forty three per cent., only those in whom local foci of infection were evident, were subjected to surgical procedures."

"Careful analysis of the cases convinces me that a smaller mortality would have occurred had we received these patients before they had been subjected to any surgical interference, and subsequently confined our treatment to nonsurgical measures."

"It is often hard to resist one's inclination, and the importunities of relatives of the infected individual that some interference should be made in patients appearing with symptoms of infection following abortion, but it should be remembered that even admitting the retention of embryonic products, the infective organisms do not limit themselves to the local area. If they have not already invaded the blood, the manipulation necessary to explore and remove the retained tissue breaks down the barriers Nature has erected against further invasion."

Hirst states that a dull, broad curet may be used for the removal of decidua. That the uterine wall in the puerperal uterus should be scraped as lightly as possible to remove loosely attached necrotic or hyperplastic decidua.

Edgar, speaking of the treatment of incomplete and septic abortion says, "Usually the finger and irrigation are sufficient to clear the

uterus, and in exceptional cases only, do I resort to the dull curet." He warns especially against curettage in streptococcic infections. To quote from E. P. Davis, "It is probably safer to explore all septic uteri once, as soon as possible after the case is seen, unless the conditions are such that this exploration will add to the patient's shock and may increase the absorption of the streptococci into the blood current. For exploratory purposes the fingers of the gloved hand are safest." He would sanction the cautious gentle use of a large blunt-edged spoon flush curet.

DeLee is conservative in the use of the curet. As to incomplete abortion he says, "If the cervix is open, empty the uterus at once with finger, aided if need be by the curet. If the cervix is closed, pack the uterine cavity and the vagina and await contraction of the uterus to expel its contents." Of septic abortion he says, "If in doubt about the uterus containing material leave it alone. If present, procure dilatation of the cervix and expulsion by uterine and vaginal tampon; avoid the curet." Regarding the treatment of puerperal infection he mentions a large list of good obstetricians here and abroad as opposed to curettage. Many of them oppose any local treatment. He says, "For the last several years, I have practically dispensed with local treatment, being convinced that it does more harm than good." He continues, "it is gratifying to note that one voice after another is being raised against douches, curettage, and other local interferences, and the author hopes that the curet will soon be recognized as a criminal instrument, in simple puerperal infections. It seems about as reasonable to curet the nose and throat in diphtheria as to curet the uterus for sepsis."

In nonpuerperal and in some puerperal conditions, curetment must needs be preceded by dilatation of the cervix. In this procedure, there is always danger of serious laceration, if done with a parallel bar instrument, or of perforation of the uterus, if by the bougies. The latter accident, either with dilator or with curet has occurred frequently, sometimes in well-trained hands. It is astonishing how readily it occurs sometimes, and the danger should ever be kept in mind. If the instrument is surgically clean, the uterus not infected, the rent not so large as to cause serious hemorrhage, and if the operator beware of injecting irritating fluid into the peritoneal cavity or of injuring some of the viscera—such an accident is usually not serious. The patient usually recovers without untoward effect. If, however, infection be introduced or symptoms of hemorrhage occur, or if there is evidence of visceral injury, laparotomy should be done at once and the situations be dealt with surgically. Krusen

reports a case seen in consultation, in which a portion of the omentum was drawn down to the external os, by a sharp curet, through an injury in the fundus. Following laparotomy and proper surgical treatment, the patient promptly recovered. Extensive injuries of the intestine and other viscera have been reported, notably by Mann and Noble. In the latter case, a knuckle of the small intestine was pulled into the vagina through a rent in the uterus. On opening the abdomen, three feet of the ileum was found torn from its mesentery.

A pathologic specimen is here presented, showing a rent made by parallel bar dilators in the anterior uterine wall, the bladder being partially separated from the uterus in the process. The physician drew down through the opening what he believed to be a tube but had the good sense to put it back and to pack firmly to avoid serious hemorrhage. It may be asked why I removed the uterus rather than to repair it. My answer is that the injury, as you will observe, is quite large and that I feared infection was present.

The special indications for the employment of the curet as a therapeutic measure are:

Chronic endometritis—removal of the diseased endometrium; the performance of early therapeutic abortions; the completion of early incomplete or inevitable abortions, not infected; and the removal of diseased tissue to palliate incurable cancer.

The curet is an instrument of diagnosis in securing material whereby we may differentiate between malignancy, endometritis, abortion and uterine polyps.

Positive contraindications to the employment of the curet are: Suspected pregnancy and obvious or probable systemic infection by way of the endometrium, especially streptococcic infection.

The dangers ever to be kept in mind are: uterine perforation with intraperitoneal infection or the introduction of irritating fluid, accompanying hemorrhage, and probable visceral injury; and, particularly in acute conditions, the removal of a leukocytic barrier, opening a gateway to general infection.

THE POSSIBILITY OF MISTAKING THE REMAINS OF  
THE HYPOGASTRIC ARTERY FOR A URETER.\*

BY

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IN performing a complete hysterectomy for carcinoma, if one wishes to make the operation as wide and complete as possible, it is important to locate the ureters in order to prevent their injury.

That the remains of the hypogastric artery might be mistaken for a ureter, had not occurred to me, nor had my attention been called to such a possibility.

A few months ago, when performing a radical operation for carcinoma cervicis uteri, we dissected out on each side of the pelvis a structure which had every appearance of a ureter, but to make certain, we traced them down along the side of the pelvis to the under and posterior surface of the base of the bladder. Feeling that the ureters had been laid aside and out of harms' way, a suture-ligature was placed at each side of the vagina and a generous portion of its walls removed with the uterus. The operation was then completed in the usual way.

The patient was returned to bed about noon in good condition. At seven in the evening the Resident reported that the general condition of the patient was excellent, but only a few drops of urine had been obtained by the catheter. As we had taken the precaution to dissect out the ureters, it was thought the anuria was due to delayed reestablishment of the renal function. About seven the following morning, the nurse reported that the condition of the patient was satisfactory except that there had been no renal secretion.

About one hour later, the patient was turned across the bed and a cystoscopic examination made. A catheter could be passed up the left ureter only about 4 cm. and on the right side only about 3 cm. It was then evident that both ureters had been ligated. The patient was immediately sent to the operating room and the abdomen and the field of operation reopened. The ureters were easily located as they were both distended to the size of an ordinary lead pencil.

\*Read at the meeting of the Philadelphia Obstetrical Society, February 7, 1918.



The ligatures were removed. The structure which had been mistaken for the ureters were followed back and terminated in the anterior branch of the internal iliac arteries.

The patient made a good recovery and the family physician reported about six months later, that she was in excellent condition.

A few weeks later, when performing a similar operation for a like condition, we dissected out a structure which appeared to be the ureter on the left side. One of the assistants remarked, "there is no doubt about it being a ureter." It was followed back and ended in the anterior branch of the internal iliac. The condition was the same on the right side.

In these two cases the hypogastric arteries were the size of a normal ureter and there was no pulsation. In one case, the obliterated artery tapered to a very fine band for about 2 cm. as it came off the internal iliac. These obliterated arteries had every appearance of ureters, but were situated a little higher and a little further out toward the side of the pelvis. Since this accident, when a ureter is located below the division of the internal iliac it is followed back beyond that point, as we have learned that tracing it to the bladder does not prove it a ureter.

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## CESAREAN SECTION IN THE TREATMENT OF ECLAMPSIA.\*

BY

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THE obstetrician is confronted with few situations more appalling than that of an expectant mother with convulsions, where the life and well being at once of two patients is suddenly thrust upon his care. That the cases of this kind coming under the notice of a single practitioner are happily few does not render the management of them any easier. Indeed, their rarity is more likely to lead to unpreparedness. These are cases where resourcefulness, prompt and often radical measures determine whether the end result will be the recovery or the loss of one or both patients.

Inasmuch as the real cause of the condition is not known, specific treatment based on such knowledge cannot be applied. Hence our treatment becomes empiric and differs very materially with different

\* Read at a meeting of the Philadelphia Obstetrical Society, February 7, 1918.

authors. That it is due to a toxemia is universally admitted; pathologic changes in the kidney, liver and brain as a result of this toxemia are well recognized; and that pregnancy is responsible for the condition is conceded, although the precise laboratory of the poison and its nature are matters of controversy. Given these premises, treatment directed to the elimination of the poison legitimately follows. Thus far, all are in accord. At this point begins the debate as to conservatism or radicalism.

There are in vogue at this time two distinct and divergent plans of treatment of ante-partum eclampsia. The one, that of the Rotunda and Stroganoff schools, which addresses its treatment to the convulsions and lets what may happen to the pregnancy. The other, the more widely adopted plan, proceeds promptly and boldly to get rid of the cause by emptying the uterus and then follows this up by eliminative treatment. The latter appears to me to present the more convincing argument; for, as Petersen, who has written much about this subject, says: "There is no gainsaying the fact that the presence of the fetus is the underlying cause of the eclamptic convulsion of the mother," whether eventually it be proven that eclampsia be of maternal or of fetal origin. Postpartum eclampsia, to be sure, occurs with the uterus empty but it is the result of an intoxication brought about by a pregnant uterus, not lessened sufficiently by the emptying of that uterus to prevent the eclamptic convulsive explosion during the puerperium. Every advocate of the medicinal or so-called conservative treatment of eclampsia would be much better pleased when confronted with a case of antepartum eclampsia if the uterus were soon to be emptied."

Happily, the uterus often empties itself spontaneously during the course of the eliminative treatment and thus solves the problem which the advocates of immediate delivery aggressively undertake, but to depend upon the efforts of elimination without cutting off the source of the poison would seem to be on a parity with the endeavor to build merchant marine vessels to relieve the food situation in Europe faster than the U-boats can destroy them.

If one adopts the practice of prompt delivery on the occurrence of a convulsion, it is important to have well thought out methods for accomplishing this and to know the limitations of each, for the suddenness of the onset leaves little time for deliberation and every hour lost in expectant treatment is a golden one. Statistics show that the more promptly the delivery is accomplished after the onset, the better is the prognosis. To quote again from Petersen: "Olin, who from the nature of his statistics was able to estimate

accurately the time elapsing between the first convulsion and the operative delivery of his patient, found the mortality in thirty-one cases, delivered one to three hours after the onset of the first convulsion, to be only 3 per cent.; on the other hand, in fifty cases delivered from six to twenty-four hours after the first convulsion, the mortality was 28 per cent." This is in harmony with the conduct of other grave disorders, as, for instance, herniæ, perforations, appendicitis, etc., and is only common sense. Delivery should therefore be undertaken at the earliest possible moment after the first convulsion.

The methods of quick delivery are practically limited to three:

(1) Dilatation of the birth canal and the application of forceps, or version, called by the French, "*accouchement forcé*."

(2) The vaginal Cesarean operation.

(3) The abdominal Cesarean operation.

It is to the latter procedure that this report is a contribution. Each case should be considered individually and that method adopted which best suits the case.

In what class of cases then would one elect to do an abdominal Cesarean operation? Obviously, in cases of disproportion, where the indication is absolute, and in the presence of tumors or deformities which obstruct the birth canal. These cases call for abdominal section whether complicated or not by the occurrence of eclampsia. If the obstruction is not an insuperable one, but merely the normal undilated natural birth canal of a primipara, is it not possible to deliver the woman more speedily, with less injury to the mother and none at all to the child and with less exposure to septic infection through a clean abdominal incision than through a prolonged and tiresome dilatation of an unobliterated cervix, through a canal which can scarcely remain sterile throughout its manipulation and which invariably suffers trauma to a greater or lesser degree, and if the trauma extends up through the cervix to the base of the broad ligaments it is of a type that cannot be satisfactorily repaired. I believe that we may confidently give an affirmative answer to these queries.

Does shock play an important part in the progress of the case, and is it more marked after a section than after *accouchement forcé*? Of course, severe shock is a serious matter in any surgical condition, but it is my impression that shock is not more marked after a section than after a forced delivery through the natural passages in this special group of cases. Indeed, I suspect that a mild degree of shock is of benefit in arresting the convulsions. Surely the

bleeding which results from operation is indicated, for withdrawing blood is the most important single procedure in the management of hypertension, and the amount of blood lost in the course of a Cesarean operation should not exceed the amount purposely withdrawn by phlebotomy. Moreover, the surgical bleeding from a section is under better control than that which arises from injury to the lower uterine segment, the vault of the vagina and the cellular tissue about the cervix, which almost invariably results from forced delivery.

Those of you who have had much experience in dragging a baby through the undilated birth canal have, I am sure, often felt chagrined and disappointed at the end result. It is an operation which requires skill, infinite patience and much time, much more time, indeed, than one likes to keep a patient under an anesthetic. This statement applies, of course, to the primiparous patient, not in labor.

Let us for a moment consider the contraindications for an abdominal Cesarean operation. The Cesarean operation in its early history was undertaken only as a last resort and until less than ten years ago, for some obstructive reason, where for instance, trial labor had failed; the consequence was that the mortality was high. It required a long time to learn that the gravity of the operation arose chiefly from infection due to repeated vaginal examinations and more particularly where the bag of waters was ruptured. There is nothing about this operation itself to make it more serious when there is no infection present than is celiotomy for any other purpose. Infection is the important point to bear in mind. How shall we avoid this? The answer is plain—avoid vaginal examinations. You must have observed how well your patients get along who have their babies before you arrive on the scene. This should have furnished food for thought. For about two years it has been the rule at the Kensington Hospital for Women to make no vaginal examinations upon patients entering into labor. Obtainable information is to be gotten in the first place by examination of the abdomen, by palpation and auscultation; and in the second place by rectal and not by vaginal examination. Thus, in a very high percentage of our cases, we are able to conduct the whole process of parturition without a single vaginal examination, and we feel that our temperature charts reflect the advantages of this procedure. With this routine, we do not have the slight temperature curve on the second, third or fourth day, which we used to call "milk fever," because it was about synchronous with the inflow of milk into the breasts. The gain is not alone to the mother but to the doctor as well, for



the accepted routine heretofore has called for a thorough scrubbing of the hands, the use of some antiseptic solution and a sterile glove before an examination should be made, all of which was a time-consuming, and in cold weather a skin-destroying process. Now we walk in, put on any old glove, without hand preparation, apply some lubricant, protect the vulva with a sterile towel or gauze and introduce the finger into the rectum, and what do we learn? This is the question that each new resident puts to us. There is no difficulty in determining whether the presenting part is high up or low down in the pelvis. If the cervix is unobliterated it is easily felt through the bowel; if it is flattened and partly dilated it presents a more difficult problem. But even so, patience and perseverance will usually yield the answer to an experienced examiner, who feels around for the thinnest place between the examining finger and the presenting part and is then able to hook up at one point or another a margin of the os and so to follow it around and determine the degree of dilatation. The direction of the sagittal suture can be recognized even though there be scant or no dilatation. When this information is supplemented by that gained from an external examination we have all the needed facts in the great majority of the cases. I grant that skill in this matter arises only from practice, but it is worth it. One's first efforts are discouraging but persistence will be rewarded. If it is determined that the case is exceptional and some operative interference is called for, then, of course, a vaginal examination is made, and with the same antiseptic precautions that are observed when instrumental delivery by the natural route is undertaken. Statistics can be adduced to show that repeated vaginal examinations, made hours before delivery, give rise to a higher percentage of infections than examinations made shortly before delivery, thus fortifying the practice of deferring vaginal examination until artificial aid is invoked.

One of the first questions asked when a patient with convulsions is admitted to the hospital is: "Has she had repeated vaginal examinations and over how long a period? Is the bag of waters broken and have there been futile efforts at delivery?" The answer to these questions determines for or against a Cesarean method of delivery in a group of cases where this method may be employed. This group, as has already been intimated, consists of women pregnant at or near term who have never given birth to a baby, and hence have undilated birth canals. Rarely multipara, with rigid and high-placed cervixes, with the baby well into the viable period, and the head not fixed in the pelvis may be included in this group.

To these may be added, to wit: Those with relative disproportion, tumors, scars, ulcers, infected wounds of the soft parts, marked edema of the vulva, and last, but not least, subjects of a previous ventrofixation, for of course, all these can become victims of eclampsia.

In the modern consideration of the Cesarean operation, for whatever purpose, the rights of the unborn child assume an increasing importance. There are few circumstances, for instance, where one would resort to this procedure to deliver a dead baby. However, the interest of the mother is paramount and for this particular disorder the operation is undertaken almost exclusively in her interest, for the babies too often are poor risks, either on account of prematurity or toxemia. In a case seen recently by me, where the baby died, the manufacture of toxins seemed to be arrested and I believe this is the rule. Induction of labor led to the birth of a dead and macerated fetus. These babies participate in the toxemia of the mother and naturally the longer they are exposed to the poison the more saturated they become with it. There is no accurate way of measuring the toxicity of the mother's blood, for sometimes they die after a single convulsion and often survive many convulsions, but this statement is probably true—that the more severe and the more frequent the convulsions the greater the toxemia. Therefore, when the child is alive and near term the clearer is the indication for early operation. Furthermore, the interest of both the mother and the child lay in the same direction, that is, in early operation, for by this means we cut off the further manufacture of toxins and thus as it were destroy the enemy at its base. So far as the interests of the child are concerned, if it be viable they are far better served by abdominal delivery than by any other method, for it is thus spared the trauma and shock of a tedious birth through the natural passages, not to mention the prolonged exposure to the anesthesia of the mother.

Another and important consideration is the environment of the patient and the experience and the skill of the operator. The operation itself is among the simplest of major surgery but should not be undertaken by anyone untrained in antiseptic technic and without some experience in abdominal surgery, nor should it be undertaken without competent help, for there is no doubt that there is more risk in invading the abdominal cavity than in operating through the vaginal canal, under a careless technic. Where a hospital with modern equipment is available it is better to transport the patient to the hospital than to make the needed preparations

for a section at home, for the indication for the operation arises so unexpectedly that the household is totally unprepared and the time required to assemble the assistants and prepare for the operation at home would be longer than it would take to carry the patient to the hospital where help and facilities for operating are at hand; thus a hospital equipment or its equivalent is an important factor in selecting the abdominal route for delivery.

Following is a report of twenty-one cases of eclampsia delivered by abdominal section, in addition to or preliminary to eliminative treatment. Two of these mothers died (and four babies), a mortality of 10 per cent. These cases were not selected because they appeared to be favorable, but were cases good and bad as they presented themselves under the conditions named above. Many of them were not early cases; that is, the operation was not done promptly after the first convulsion which is the time of election, but even so the percentage of recoveries compares not unfavorably with that of other methods of treatment. However, I desire only to record these cases and not particularly to lay stress upon their percentage value, for of course such a small number has no value except as a contribution to a larger series.

CASE I.—C. B., Polish, primipara, aged twenty-nine years, admitted to P. E. H., November 7, 1911, in a comatose condition. Venesection and medical treatment were instituted and in spite of this convulsions continued, one of them, according to the notes, was practically continuous and lasted thirty minutes, at the end of which time she was so swollen and cyanotic that it appeared as if she were about to die. I had never at this date done a section for eclampsia. The baby's heart sounds were audible and to attempt a delivery through the undilated and edematous natural passages of the mother, who appeared to be moribund, seemed futile, so a section was decided upon with a view of rescuing the baby, and to my amazement both the mother and child survived the operation. After two or three days of profound coma consciousness began to return, but more amazing was the changed appearance of the individual, from a bloated, edematous, cyanotic mass of flesh, the features began to dawn and the limbs to assume a natural shape, and by the end of ten days or two weeks there appeared an individual seemingly less than half the size of the one operated upon. The baby, which was well developed and healthy in appearance at first, failed to grow, although taking its nourishment well and apparently digesting it, being fed artificially, of course. It grew more and more leaden in hue and died after thirteen weeks, weighing the same as when it was born.

CASE II.—E. H., nineteen years, admitted to P. E. H., February 7, 1914, eight and one-half months pregnant. Bowels and kidneys have been regular and active. No history of headaches. The onset

of the illness was sudden. She was brought to the hospital in the ambulance in convulsions, pulse 138, temperature 100.2. Section was done on account of the great edema of the vulva and the undilated birth canal of a primipara, resulting in recovery of the mother and a living child.

CASE III.—Mrs. V., aged thirty years, admitted to the Frankford Hospital. Her first baby was delivered by a mutilating process on account of disproportion. Now in her second pregnancy it was estimated that she was two weeks overdue without engagement of the head. Her legs, hands and feet were swollen, she had headache, and the urine contained albumin and casts. Section was decided upon for her delivery. Before she was brought for operation she developed a convulsion. Section resulted in a living baby and an uninterrupted recovery of the mother.

CASE IV.—S. S., aged twenty years, Primipara, admitted to P. E. H., February 25, 1914, pregnant at term and in labor, with unruptured bag of waters. Had had seven convulsions before admission. Section was done on account of eclampsia and primipara and unruptured bag of waters. Result—Recovery of mother and stillborn child. No convulsions followed operation.

CASE V.—B. W., aged twenty-three, primipara, admitted to P. E. H., February 26, 1915. Convulsions before and after admission. Pregnant eight months. Section resulting in recovery of mother and living baby. One convulsion followed delivery.

CASE VI.—H. S., aged eighteen years, admitted to P. E. H., April 29, 1915, primipara, after having an unknown number of convulsions. Section resulting in recovery of mother and a living baby.

CASE VII.—M. R., aged twenty-four, primipara, admitted to P. E. H., March 6, 1912. On March 2d, complained of headache and dimness of vision. Had first convulsion on March 4th, and was brought to the hospital on March 6th, and eliminative treatment started, expectant treatment. However, she was operated on later the same day and died at 2.00 P. M. on March 8, 1912. The baby lived.

CASE VIII.—Mrs. D., nephritis with marked edema and cough. Toxemia. Section resulting in living baby and recovery of the mother. Was admitted to the Kensington Hospital for Women on March 11, 1914, with a blood pressure of about 200 mm., extensive edema of the legs and face, skin of marble hue, mental dulness, headache and scanty urine containing albumin and numerous granular casts. Her condition improved considerably after one week by the use of a milk and buttermilk diet, purgation and baths. The urine, however, continued scanty, the twenty-four hour output for the 15th, 16th, 17th and 18th being 12, 25, 15 and 26 ounces respectively, and after a distinct gain for the first few days after admission to the hospital, she began again to lose ground even under strict treatment, so on the 19th it was decided to bring about delivery, even though no convulsions had occurred. Inasmuch as she was a primipara with breech presentation, abdominal section was elected in preference to induction of labor through an undilated birth canal.



Owing to her cough chloroform was employed as an anesthetic and a 10-pound baby quickly delivered. After the uterus was emptied it was observed that there was a marked projection of the sacral promontory which would have greatly increased the difficulty of delivering a 10-pound baby presenting by the breech through the natural passages. Her operative recovery was uneventful.

CASE IX.—Nephritis, cardiac dilatation, edema of the lungs. Section—Followed by death of the mother and baby.

Mrs. G., aged twenty-four years, primipara, admitted to the P. E. H. on March 10, 1914, and died March 12, 1914, pregnant eight months. Has suffered a great deal throughout her gestation from headaches and constipation. Ankles and eyelids are edematous. For the past three weeks has been very short of breath, with cough, and expectoration of a mucoid material. This morning she grew suddenly worse. She could not lie down. She became deeply cyanotic and was constantly coughing up a frothy and bloody mucus, which was her condition on admission. The respirations were rapid and labored; the vessels of the neck engorged; the pulse very rapid, irregular and weak; the right heart was dilated and moist râles were audible all over the chest. Twenty ounces of blood was withdrawn at once from the median basilic vein and atropine, grains  $\frac{1}{150}$ , strychnine, grains  $\frac{1}{30}$ , and camphorated oil,  $\mathfrak{M}_{xx}$  given hypodermatically, followed by some relief. Prompt delivery of the baby was regarded as imperative, and owing to the primiparity of the mother, section was decided upon as the quickest method of delivery. Morphine, grains  $\frac{1}{4}$  was given hypodermatically and the section done under local anesthesia, for which Schleich's solution was employed. The abdominal incision only required an anesthetic. For the uterine incision no anesthetic was used or needed. A well-developed baby, with pulsating cord, was quickly delivered, but the assistants, in spite of faithful efforts, could not succeed in establishing respiratory action. A large quantity of serum escaped from the baby's mouth and nose during the efforts to induce respiration, showing that it is probable that this infant sucked amniotic fluid into the bronchial tubes by intrauterine respiratory efforts, stimulated by the blood highly charged with carbon dioxide which was furnished to it. Thus the baby appeared to be literally drowned in amniotic fluid. Following the operation, which was done about midday, the patient was quite comfortable, with improved pulse, able to lie flat and relatively free from respiratory difficulty. Although pallid and waxy in appearance her improved condition seemed to justify the hope that she might recover. She, however, passed only 2 ounces of urine during the first eighteen hours after operation, but 17 ounces were passed during the next eighteen hours. The abdomen became more and more bloated, the bowels resisting all measures for their evacuation. Toward evening nausea supervened, for which the Resident Physician passed the stomach tube, whereupon the patient had a convulsion and died about thirty-six hours after delivery. Her urine boiled solid with albumin and was loaded with granular casts.

CASE X.—Mrs. R., aged nineteen years, admitted to the Kensington Hospital for Women on August 24, 1915, primipara, apparently at term. Two convulsions had occurred before admission and one after admission to the hospital. Section was promptly resorted to and a living child recovered, which lived only one day. Mother was discharged as cured on the sixteenth day.

CASE XI.—Mrs. W., aged twenty years, admitted to the Kensington Hospital for Women on Jan. 22, 1916. Primipara, overdue, presenting part not engaged, marked edema of the legs, R. O. P. Urine boiled solid, many light and dark granular casts, systolic blood pressure 185. Delivery was decided upon and abdominal route selected and a baby weighing 6 pounds 3 ounces recovered. Mother and baby discharged well on the fifteenth day.

CASE XII.—Mrs. L., aged twenty-one, admitted to the Hospital, March 15, 1916, primipara, having had four convulsions since 7.00 A. M. and being about seven months pregnant. At about 2.00 P. M. Cesarean section was performed and live but dyspneic baby recovered. The mother had been given morphine sulphate grains  $1\frac{1}{4}$  from 9.00 to 1.00 P. M. The baby lived about twenty hours, having had two or three convulsions and perhaps dying in a convulsion. The mother recovered.

CASE XIII.—Mrs. S., admitted to the Hospital, July 9, 1915, with a diagnosis of toxemia of pregnancy, and medical treatment given, in spite of which the toxemia deepened. She was about seven months pregnant, hence it was decided that the cause of the trouble should be removed. Section was adopted as the method of choice on account of the primiparity. A live baby weighing 2 pounds was secured. The mother recovered.

CASE XIV.—Mrs. B., admitted to the Kensington Hospital for Women, March 29, 1916. Had eight convulsions with first pregnancy and was delivered at the P. E. H. by forceps of a dead baby on account of disproportion. This time her legs, hands, and face were much swollen, and she had loss of sight for eight hours. The bag of waters broke and she had a show three weeks before operation and the baby was supposed to be two weeks overdue. No convulsions had occurred. However, operation was done and a 7-pound 10-ounce baby secured. Mother and baby made a good convalescence. Mother lost 28 pounds in weight in the twelve days following the operation, most of which must have been water.

CASE XV.—Mrs. R. I., aged nineteen years, primipara. Has suffered with edema of feet and headache for the past three months. At 2.00 P. M. on September 13, 1916, had her first convulsion. Before her admission to the hospital at 8.00 P. M. she had three more. Blood pressure on admission was 190-150, and after admission four more convulsions at short intervals before being brought to the operating table. Operation resulted in a living baby, weighing 5 pounds 8 ounces. Patient passed a very restless night and after eighteen hours treatment showed marked improvement. Result, recovery of mother and baby.

CASE XVI.—Mrs. G., aged twenty years, primipara, brought in

in the ambulance, having had several convulsions. Blood pressure on admission 170-110. Three convulsions after admission. Patient maniacal between convulsions. Operation resulted in a 6-pound 11-ounce baby and recovery of mother.

CASE XVII.—Mrs. E., aged twenty-one years, primipara. Has suffered with headache for three months and edema. Had several convulsions at home. Brought to the hospital in the ambulance. One convulsion while being prepared for operation. Operation resulted in an 8½-pound living baby. Result, recovery of mother and baby.

CASE XVIII.—L. K., aged twenty-three years, primipara. Was well until one week before admission when she complained of edema and headache. Was brought in by the ambulance. One convulsion in the ambulance and four previously. Operation resulted in a 7-pound 4-ounce living baby and febrile recovery of the mother.

CASE XIX.—E. B., aged thirty-five years. Was first admitted to the Kensington Hospital for Women on August 21, 1917, after having had three convulsions. Systolic blood pressure on admission was about 96, and even after the convulsions there was only a trace of albumin in the urine and very few casts. She was unconscious. She was given at once intravenously a solution of sodium bicarbonate and glucose and purged and after about twelve hours became conscious and after a few days returned home and was directed to take purgative medicine every morning and live on milk. She continued well for some days. She then developed a pain in the upper abdomen and right chest and thought she was in labor. The following twenty-four hours she passed very little urine and had some headache, but practically no edema. She was then re-admitted to the hospital and as convulsions were thought to be again imminent, abdominal Cesarean section was done and a live baby weighing 5½ pounds was delivered. The baby cried lustily immediately after extraction. It was put in an incubator, but lived only a few hours. Mother made a good obstetric recovery, but developed pleuro-pneumonia about ten days after returning home and was admitted to another hospital.

CASE XX.—J. P., admitted to the Kensington Hospital for Women on November 14, 1917, having had ten convulsions before being brought to the operating table, which occurred fifteen hours after the first convulsion. The patient was in labor on admission, but the cervix was high up and undilated. A baby weighing 8 pounds 2 ounces was secured. Both the baby and mother made a good recovery.

CASE XXI.—G. H. L., aged twenty-one, primipara. Increasing toxemia while under treatment. Systolic blood pressure on admission was 180. After a cabinet sweat the blood pressure was 198, associated with ringing in the ears and intense headache and some edema. Delivery was decided upon, and owing to the primiparity and the undilated birth canal, section was resorted to. Result, recovery of mother and baby. Patient discharged in two weeks.

## CONCLUSIONS.

This argument and experience seems to justify the conclusions which may be briefly summarized as follows:

1. Since pregnancy is responsible for the eclampsia, its termination by one method or another is indicated as soon as a convulsion has occurred.

2. The interest of both mother and child are served by the same procedure—namely—early operation.

3. Each case should be considered on its own merits and that method of delivery adopted which best suits the case.

4. Delivery by the abdominal route is indicated in primiparæ where labor has not set in—or is not well advanced—where the child is living and viable, and the nearer the child is to term, the stronger the indication.

Multiparæ at or near term—but not in labor—with rigid and high placed cervixes, may well be included in this group.

5. The contraindications for the Cesarean operations are repeated vaginal examinations, examinations continued over a long period, more particularly where the bag of waters has been broken; and, of course, where unsuccessful attempts at delivery have been made, and where there is any infective process in the birth canal.

6. Operations through the abdomen are attended with more risk than operations through the birth canal if done under unfavorable conditions, hence a suitable environment and a capable operator and assistants are a *sine qua non* for this method of delivery.

1739 NORTH SEVENTEENTH STREET.

## TRANSACTIONS OF THE NEW YORK OBSTETRICAL SOCIETY.

*Meeting of February 12, 1918.*

*The President, DR. HIRAM VINEBERG, in the Chair.*

DR. DOUGAL BISSELL presented a report on two cases of

TOTAL HYSTERECTOMY WITH PLASTIC OPERATION ON THE VAGINA  
FOR EXTREME PROCIDENTIA.\*

## DISCUSSION.

DR. HERMANN GRAD.—I had the opportunity of seeing one of the cases which the doctor has reported and the result was all that could be desired. The anterior and posterior walls of the vagina were in perfect apposition. Dr. Bissell emphasizes the point that both in the anterior and posterior wall of the vagina and the fascial sheaths

\* For original article see page 892.



are lapped over much in the same manner as the vesicouterine fascia which Dr. Rawls demonstrated before this Society recently. Dr. Bissell laps the fascia in a different way than Dr. Rawls does, particularly the posterior wall of the vagina. He does not bring the levator muscles together but utilizes their fascial support. Thus he gets a pelvic floor which feels normal to the touch and is normal in function.

DR. J. R. GOFFE.—I would like to ask the doctor how long it is since these operations were done and what the results are to-day. If the Society will permit me there is one point which I would like to bring out in regard to the supports of the uterus, namely, that in every plastic operation the nearer we follow Nature's plan of support the better the end results will be. In procidentia these ligaments are all stretched out. If the uterus must be removed, as Dr. Bissell described, and the bladder previously detached from the base, leaving the two ligaments, we can restore the exact support by stitching the broad ligaments together across the pelvis and to them the bladder can be attached in its original position. In fastening the bladder we take the posterior line of the trigone, which is the strong fascia in the base of the bladder, and stitch it at the two angles and the middle point. The bladder is thus restored to its normal position and functionates as naturally as before the operation. It is not unusual to have the patient void urine as soon as she comes out of ether and continue to do so without catheterization.

DR. DOUGAL BISSELL (closing).—Dr. Goffe asked, "How long a time had elapsed since these cases were operated on." They have just been operated on and the report is made with the object chiefly of describing and recording a surgical procedure, the value of which is not yet determined.

Nature did not design the broad ligaments for supporting the uterus. The support of the uterus is the fascial diaphragm of the pelvis. The broad and round ligaments are usually not in action and are brought into action only when the bladder is distended and the uterus is forced back toward the sacrum. When the bladder empties, the corpus uteri is assisted in its return to the anterior or standard position by the action of these lateral ligaments. I have many times used the broad and round ligaments by interposing them between the bladder and the fascia of the anterior wall in operating for the cure of procidentia uteri and cystocele. At times my results were satisfactory and at times they were not. On the whole I consider my results from this method of procedure unsatisfactory. Correcting the abnormality resulting from procidentia and cystocele, by lapping the vaginal fascia and approximating the cardinal ligaments we approach Nature's original plan. It is a much simpler procedure than that of uniting and interposing the round and broad ligaments and can be executed with exactness. Every organ from the thoracic diaphragm to the pelvic diaphragm depends for its support on the intraabdominal fascia, of which the pelvic fascia is but a part. The cervix uteri passes through this pelvic diaphragm and the entire organ is supported by it.

DR. GEO. W. KOSMAK presented a communication on

THE NEED FOR AN INTENSIVE STUDY OF THE MORTALITY  
ASSOCIATED WITH CHILD-BEARING.\*

In view of the recent publication of the comparatively high death-rate attendant upon child-bearing in this country and the fact that no corresponding reduction has occurred as compared with that associated with other diseases, the necessity for an intensive study of the subject seems indicated. As the wastage of infant life has been made an object of preventive medicine a more complete supervision of the mother, both before and after labor, has demonstrated the necessity for a similar effort directed toward the mortality of child-bearing. It is claimed that in the so-called registration area of the United States, which in 1913 included between 65 and 70 per cent. of the total population, the mortality in 1891 associated with the child-bearing function was 15.3 and showed very little variation up to 1913 when it was 15.8 per 100,000 of the population. A further study of the mortality tables published in the last national census shows that the death-rate per 100,000 women of child-bearing age in 1900 totaled 50.3 and included 21.6 for puerperal sepsis alone. These figures may perhaps be criticised for lack of detail and a more accurate estimate would be one based on the number of deaths of mothers per 1000 live confinements.

For the purpose of arriving at a more definite estimate of the condition a detailed study of the deaths occurring in the hospitals of the Borough of Manhattan, New York City, which maintain obstetrical services has been proposed and will be carried out with the assistance of the Public Health Committee of the Academy of Medicine. A questionnaire has been prepared for this purpose which takes up in detail the facts concerning each fatal case during a five-year period ending with 1917. Particular attention is to be paid to the antecedent history of these fatal cases and to separate the various causes of death in greater detail. The official classification at the present time includes on the one hand fatalities from septicemia and all the remaining causes on the other. This is extremely unsatisfactory for it affords no idea of the direction in which prophylactic measures either of a medical or social character must be applied. Statistics based on hospital cases were selected because more complete records would be available and this would also render possible an estimate of the number of cases referred to institutions

\* For original article see New York Medical Record, March 9, 1918.

from outside sources which might have been saved by earlier and perhaps more skilful treatment.

From the facts thus obtained we ought to be able to procure certain definite information regarding the various etiological factors that have contributed to the mortality of pregnancy and labor, to know of what value prenatal work has been, whether previous neglect of the attendants before referring a case to the hospital is a factor in the situation, how many operative deliveries ended in fatalities and what are some of the underlying conditions in the production of puerperal sepsis. It is proposed to study the information thus obtained with a view of giving wider publicity to the results and also to stimulate investigators in other centers to make similar studies so that by their collection a more definite knowledge of this important subject may be obtained in so far as this country is concerned.

DR. JOHN O. POLAK read a paper on

#### PUERPERAL PELVIC INFECTION.\*

##### DISCUSSION.

DR. E. B. CRAGIN.—I am greatly relieved to find Dr. Polak so extremely conservative, because I think the older we get and the more we look back on our experience in the treatment of puerperal infection, the more we feel that the secret of success in the treatment is to aid Nature and not to handicap her in the recovery of patients from puerperal infection. There are only one or two things in the pathology that I would like to emphasize, and I am sure Dr. Polak has the same experience that most of us do, that every now and then a streptococcus infection will start in the cervix with a severity so great that Nature is able to build up no protective zone and the infection will run up to the peritoneum through the uterus and the broad ligaments resulting in a septic peritonitis with perhaps a secondary involvement of the tube. It seems to me that the one important thing in the treatment of puerperal infection is based on that chart which shows round-cell infiltration. If it was not for the facts depicted in that chart, we would all lose many cases of puerperal infection. That is Nature's protective zone and the reason that we do better work to-day than we formerly did, is because we do not break down this protective zone. We abstain to-day from the use of instrumentation, curets, douche nozzles and the like. The reason, in my judgment, for the success which we have in the treatment of puerperal infection to-day is that we favor drainage by posture and leave the patient alone and help Nature as far as possible.

\* For original article see page 916.

Those of us who are older can remember the time when we had to recite at examinations the differences between cellulitis and salpingitis and then, when Lawson Tait took out the masses in the pelvis, it was claimed that there was no such thing as cellulitis, or parametritis, as Dr. Polak called it to-night, but that it was all salpingitis. Then later we found that as the result of infection following labor or abortion that we did have this inflammatory infection and that there was an acute parametritis or cellulitis.

Our President asked those of us who were to take part in the discussion to put on record our experience in the last few years in our different hospitals, and I have jotted down the result of this survey at the Sloane Hospital. The treatment outlined by Dr. Polak is followed very largely by us, as I presume it is by most of the others here. I took, at the suggestion of the President, the last 10,000 cases of delivery which practically cover a period of six years. In that time we had thirty-four cases of infection and in those thirty-four we lost seven, which is a maternal mortality from puerperal infection of seven one-hundredths of 1 per cent. (0.07 per cent.).

I have very little to add to the treatment suggested by Dr. Polak. In regard to the posterior vaginal incision and drainage, I would say that where the streptococci invade the broad ligament and the peritoneum, I don't believe the posterior incision is going to do any good. Personally, I reserve all surgical procedures in puerperal infection to cases in which I feel there is a collection of pus. Unless I can find either pus tubes or a collection of pus somewhere in the uterus or pelvis, I believe surgical interference is not indicated.

DR. A. B. DAVIS.—We see a large number of infection cases of various kinds in the Lying-In Hospital service. One very salient and outstanding point is the fact that we do not see the severe sepsis that we did years ago, either in our consultation work or in the cases that are sent into the hospital. I have been in this service nearly twenty-eight years, almost constantly, in which time we have taken care of 115,000 to 120,000 cases, and in looking back I can see there has been a tremendous improvement. I cannot give you statistics to-night, Mr. Chairman, as I haven't been able to get them, but our treatment of these cases is very similar to that which Dr. Polak has presented. We learned years ago to leave them alone. I, among others, have seen them operated on without any improvement or alleviation of the symptoms. We added to the shock and trauma that they were already staggering against to carry off.

Before the present building was erected we had the old Fish residence and at the back of it there were porches looking out on to a considerable garden. We often lost septic cases, but there was one of our women whom nobody had any idea would recover, and in order to make her as comfortable as we could, we put her out on the porch and left her there day and night for weeks. She finally made a good recovery. It was probably from that particular instance, that we were induced to put weight upon the open-air treatment and find



it a very valuable factor in these septic cases. Their general nutrition improves and the fresh air helps them to fight the local or general infection and a good many of them recover, aided by the open-air treatment. We also pay particular attention to drainage with posture. We do not use the Fowler position, but raise the head of the bed. We place an ice-bag over the fundus. We do not use ergot or pituitrin. A douche in our service is rarely employed. We would like to emphasize the fact that in the treatment of these septic cases intrauterine douches are not a good thing.

Now, with regard to the bacteremias: we have tried the various serums as they have come along, the vaccines and the intravenous injection of normal salt solution but have failed to derive much improvement from these procedures. I believe we do more harm than good with them. We believe in the principle of letting the patients alone, keeping up stimulation and leaving the rest to their natural powers of recuperation. If we have pus (which we rarely do) we evacuate it.

DR. G. L. BRODHEAD.—I would ask Dr. Polak to give us if possible, in closing the discussion, information as to the results of blood cultures in cases of thrombophlebitis.

I have collected the statistics for the past five years in the obstetric service at Harlem Hospital, with the following results:

Many women came directly to the surgical service and a few were transferred to the surgical service and these are not included in the series. There were eighteen septic abortions, of which one recovered and seventeen died, and twenty-six full-term cases, of which twelve recovered and fourteen died, a total of forty-four cases in all. All abortion cases entered the hospital septic. Many died within a few hours after admission or within a few days. In four cases of abortion the blood culture showed streptococci; in one the blood culture was negative, although the patient died on the eighteenth day.

In full-term cases blood culture revealed streptococci in four, three of whom died. One left the hospital forty-eight days after admission in fair condition. In one case blood culture showed staphylococcus albus, the temperature coming to normal in six days with recovery. In another case blood culture showed staphylococci and streptococci, the patient leaving the hospital after three months, in fair condition. In three fatal cases the blood culture was negative. In one case the culture was negative, the patient recovering after one week. Another patient had a negative culture and went home after two weeks, still running a temperature. Another with negative findings had a normal temperature after fifteen days and was transferred to the Bellevue Psychiatric Ward on the twenty-fourth day.

To summarize: There was a positive blood culture in ten patients, of whom seven died. Of the three recoveries one patient was in the hospital forty-eight days, another three months and another had a mild sapremia. Of the cases with negative blood cultures there were seven, of whom four died, and two of those who recovered were merely sapremic, very mild cases.

Curettage was performed in five cases of septic abortion and,

although in three cases considerable amounts of secundines were removed, all of the patients died. On the other hand, in a service which averages at least 200 cases of abortion each year we perform a large number of curettages in incomplete abortion, many of the women having temperatures of  $101^{\circ}$ – $104^{\circ}$  F. on admission, with almost invariable recovery. Only one woman with sepsis at term was curetted, a mass of placental tissue being removed and the temperature coming to normal in fifteen days with recovery.

Fatal cases of sepsis at term numbered fourteen. Of this series seven were delivered in the hospital; four of these had normal labor; one had a Cesarean for eclampsia, dying of general peritonitis; one had a hurried preparation and version for placenta previa; and one had a very difficult labor with excessive manipulation. The four cases of normal labor were confined at about the same time three years ago and all were desperately ill with an extremely virulent streptococcic infection, which terminated fatally after a few days in each case. We cannot excuse these cases, but in an annual service of more than 1000 confinements, many of the women having been frequently examined outside of the hospital, the number is not large.

Autopsies are, unfortunately, infrequent. Some of the cases go to the coroner, and in many other cases autopsies are refused.

In one case following abortion there was a bacteremia, but the autopsy findings were comparatively unimportant, the endometrium being thin and covered with a slightly reddish-yellow purulent exudate.

The Cesarean patient had a general septic peritonitis. In another autopsy smears and cultures from the peritoneal fluid, spleen pulp and inferior vena cava showed streptococcus infection. In the fourth autopsy there was general peritonitis, the entire lung was emphysematous, the endocardium pinkish-red, and the uterine cavity was empty.

In conclusion, we believe that vaginal examinations should be made very infrequently, and then only after very thorough preparation, and that rectal examinations should be encouraged, and invariably made unless there are very good reasons for making the vaginal.

Dr. Brodhead said that he had also tried sulphate of magnesium and the different sera and found practically no results from these methods of treatment.

DR. F. W. RICE.—At the Manhattan Maternity since January 1, 1912, there were twenty-two cases of pelvic infection following delivery of 9654 cases. There were no deaths. There are very few cases treated at the hospital which have not been under our care from seventh month of the pregnancy. One case referred to our hospital had been under the care of a midwife and had a ruptured uterus, but recovered after eighteen hours of hard labor pains.

Six of these cases were discharged with no evidence of pelvic infection.

Three cases showed subinvolution with a distinct mass in the broad ligament.

Six cases with only evidence of subinvolution without tenderness.

Two cases with foul lochia—one case in poor condition with large tender uterus, insisted on leaving hospital at her own risk.

There was leukocytosis in only two cases, one with 16,000 leukocytes, the other 23,700. The differential counts were negative.

Blood cultures in these cases were negative.

Treatment consisted of catharsis, ergot or ergotine tablets; hot vaginal douches of 1 per cent. lysol after first week; ice-bags over fundus. Intrauterine douches given in only one case.

*Symptoms.*—No distinct chill; temperature 100 to 104—average days, seven. Tenderness over uterus, two cases; pain referred more to one side of lower quadrant; loss of appetite; diminished function of breast; foul and profuse lochia.

#### SUMMARY OF INFECTIONS IN 1050 CASES AT THE SCHOOL OF MIDWIFERY.

One case—Pelvic infection, eight day temperature to 103; with high blood count following use of bougies.

One case—Normal delivery, second degree laceration; blood culture sterile; temperature from third to thirteenth day; blood count high.

One case—Subinvolution, uterus four fingers above symphysis on tenth day; temperature five days; no blood count.

One case—Gonoc. infection with tube (rt) with tenderness; slight temperature for ten days.

One case—Retained secundines, temperature for eight days; in bed for thirteen days.

One case—Retained placenta, adherent, high forceps; lacerated perineum; postpartum hemorrhage, followed by shock; sapremia; negative blood culture; subinvolution; pelvic abscess.

Two cases—Subinvolution of uterus following breech extraction; neither case ever had temperature above 101; uteri three fingers above symphysis on tenth day.

One case—Temperature elevated for six or seven days; no blood count; subinvolution following version and postpartum hemorrhage; hot saline douches (ergot M. xx, quinine gr. v, strychn. gr. 1/60) t.i.d.; foul lochia.

#### TOTAL NUMBER OF CASES, NINE.

Leukocytosis in.....	2
Not taken in.....	5
Blood culture negative.....	2
Not taken in.....	7
Condition on discharge—cured.....	3
Discharged with mass in pelvis.....	2
Discharged with pus tube.....	1
Discharged with mass in broad ligament.....	1
Discharged with subinvolution.....	4
Foul lochia on discharge.....	1

## 1000 CONSECUTIVE CASES AT BELLEVUE—56 CASES OF INFECTION.

- 1 case. Temp. from 1st to 7th day.
- 1 case. Temp. from 1st to 18th day, mass on right side.
- 2 cases. Temp. from 2d to 5th day, with subinvolution (one case induced abortion).
- 2 cases. Temp. from 2d to 6th day, with subinvolution.
- 3 cases. Temp. from 2d to 7th day, with subinvolution.
- 1 case. Temp. from 2d to 8th day, with subinvolution.
- 2 cases. Temp. from 2d to 9th day, with subinvolution.
- 5 cases. Temp. from 2d to 10th day, two cases with subinvolution.
- 1 case. Temp. from 2d to 11th day, with subinvolution.
- 4 cases. Temp. from 2d to 12th day.
- 1 case. Temp. from 2d to 14th day, with subinvolution.
- 1 case. Temp. from 2d to 15th day, placental tissue removed on 13th day.
- 1 case. Temp. from 2d to 16th day.
- 1 case. Temp. from 2d to 18th day, with subinvolution.
- 1 case. Temp. from 3d to 5th day.
- 1 case. Temp. from 3d to 17th day, 105 on eighth day.
- 2 cases. Temp. from 4th to 6th day, with subinvolution.
- 1 case. Temp. from 4th to 7th day, with subinvolution.
- 3 cases. Temp. from 4th to 9th day, with subinvolution.
- 3 cases. Temp. from 4th to 12th day, with subinvolution.
- 1 case. Temp. from 4th to 16th day, with subinvolution.
- 1 case. Temp. from 4th to 18th day, with subinvolution.
- 2 cases. Temp. from 5th to 7th day, with subinvolution.
- 1 case. Temp. from 5th to 17th day, with subinvolution.
- 1 case. Temp. from 5th to 21st day, with subinvolution.
- 1 case. Temp. from 6th to 8th day, with subinvolution.
- 1 case. Temp. from 6th to 10th day, with subinvolution.
- 1 case. Temp. from 6th to 17th day, with subinvolution.
- 3 cases. Temp. from 7th to 10th day, with subinvolution.
- 1 case. Temp. from 7th to 11th day, with subinvolution.
- 1 case. Temp. from 8th to 12th day.
- 1 case. Temp. from 8th to 18th day, with subinvolution.
- 1 case. Temp. from 9th to 12th day, with subinvolution.
- 1 case. Temp. from 9th to 14th day, with subinvolution.
- 1 case. Temp. from 10th to 17th day, with phlebitis.
- 1 case. With gonococcus infection.
- 2 cases. Blood culture negative—one leukocytosis.

Out of 1000 consecutive cases fifty-six showed evidences of infection of the pelvis. In the majority of these cases the only evidence was an unenlarged tender uterus.

The majority of the cases had temperature starting on the second day and in very few cases were blood counts taken and in only two cases were blood cultures taken, these being negative. Two cases had salpingitis (mass in side) and one of these cleared up on treatment.

Results in 1000 cases at Bellevue—total number of cases, fifty-six; one death. Septic temperature from the first day. Blood culture negative. W. B. C., 1,000,000; polys, 83 per cent.



3 cases.	Temperature began on	1st day.
22 cases.	Temperature began on	2d day.
2 cases.	Temperature began on	3d day.
10 cases.	Temperature began on	4th day.
4 cases.	Temperature began on	5th day.
3 cases.	Temperature began on	6th day.
4 cases.	Temperature began on	7th day.
2 cases.	Temperature began on	8th day.
2 cases.	Temperature began on	9th day.
1 case.	Temperature began on	10th day.

Total cases at Bellevue Hospital.....	56
Total cases at Manhattan Maternity.....	22
<i>School for Midwives</i> Manhattan Maternity.....	9
Total.....	87

## CONDITION ON DISCHARGE.

Mass in pelvis.....	9
Subinvolution.....	1
Phlebitis.....	2

Hist. No.	Date	Para	Diagnosis	Treatment	Results
5590	July 2, 1914	I	L. O. A. sapremia	Catharsis— <i>aspirin</i> — <i>codein</i> . Fl. ext. <i>ergot</i> , 1% <i>lysol</i> , vaginal <i>douche</i> .	Discharged on 14th day with slight subinvolution.

## SUMMARY OF PUERPERAL INFECTION IN 22 CASES.

Total number of cases.....	22
Treated with <i>ergot</i> .....	7
Treated by vaginal douches.....	12-21
Treated by intrauterine douches.....	1
Leukocytosis in.....	2-3
Blood cultures (none positive).....	
Longest duration of infection (days).....	16
Condition on discharge—cured.....	6-8
Condition on discharge—poor.....	1
Discharged with mass in pelvis.....	3
Discharged with subinvolution (uterus not tender).....	6
Discharged with foul lochia.....	2

DR. HAROLD BAILEY.—I think we will all be benefited by Dr. Polak's paper because it tends to re-direct our attention to the pathological anatomy of these different types of infection. From the standpoint of prophylactic treatment there are one or two things which I might reiterate. In the first place, the point which Dr. Brodhead just brought up, the frequent rectal examination and the infrequent vaginal examination, and another is the iodine preparation

of the vulva and the surrounding skin and thighs, as done in many gynecological clinics. From the standpoint of diagnosis it seems to me that we should class those cases as septic with a continued fever of over twenty-four hours and a foul lochia, because I believe almost all those cases have their origin, as Dr. Polak pointed out, in septic endometritis or in infection from the cervix. When the diagnosis is made we give the patient one intrauterine douche, using a small glass catheter douche nozzle and introducing it with the greatest care so as not to injure the infected endometrium, and following that we proceed along the line of what appears to be quite the standard with the rest of us, leaving the patient alone. We use ice over the fundus to cause contraction of the uterus and not the diminution of the growth of bacteria but I have seen two cases in consultation practice where the skin of the abdomen has sloughed from the constant use of an ice-bag, so that when an ice-bag is ordered there should be instructions for its frequent removal. It should be applied for not over an hour or two at a time. We use ergot but not pituitrin. We also use the Fowler position.

Now as regards the minimum of examinations. There is some danger in limiting the number of examinations because of the development of pus from the seroplastic exudate. Such an example occurred on our service some seven or eight years ago when on the twentieth day an abscess pointed through the sacrosciatic foramen and into the gluteal muscles and was there opened. Dr. Judd, of this society, reported a similar case. As Dr. Rice said, the septic cases in the Bellevue service are transferred to the gynecological service and on the obstetric service we have not opened any cases of pus by a posterior colpotomy.

DR. F. R. OASTLER.—Several remarks have been made with reference to the question of the virulence of the organism, of the immunity of the patient and of the site of the infection, having to do largely with the course of a puerperal infection, and I recite those three conditions simply to tell you of the misfortune that I have been going through in the last four months on my service at the Lincoln Hospital. For some ten years we had very little infection (I suppose no more than that which you get in the ordinary service) until October last. Then, apparently out of a clear sky, using practically the means that have been discussed here tonight in the treatment of the puerperium and the deliveries, we began to get a series of cases of infection of all degrees of virulence—mild septiciemias, severe septiciemias and bacteremias. Up to the present time we have had about forty-five cases of infection (with three deaths) of all degrees. As soon as this put in an appearance we did the usual thing of examining repeatedly our sterilized material, examining our fingers, our gloves and all portions of the operative paraphernalia. We took blood cultures and uterine cultures of the septic cases and got different organisms, and with one exception the cultures taken from hands, gloves, etc., were negative. We found the staphylococcus in one of our bundles of gauze, but other than that repeated cultures were negative. The matter became so

serious, and as we didn't seem to be making any headway, we changed our nursing staff and eventually our medical staff, but still the trouble continued. Eventually we closed the ward and admitted new patients to an entirely different ward, but still the infections continued. Finally we renovated the old ward and put the cases back and at the present time we have had one or two cases in the last three weeks, both of them mild, but nevertheless the infection still continues, so that it seems that although we can undoubtedly speak with a degree of intelligence of the virulence of the organism, the immunity of the patient and the site of the infection, nevertheless we must recognize the fact that there are contagious conditions entering the hospital service over which we do not seem to have very much control. I think that almost every man who has had charge of an obstetric service for any length of time will run up against this trouble. It seems to me it is comparable to other conditions, such as epidemics of measles in the army, not a serious thing, but one that does become serious when it breaks out in a body of men like the army, and the same observation holds true of typhoid, typhus and cerebral meningitis.

DR. C. G. CHILD, JR.—I hoped when I came here this evening that I would listen to a discussion of the treatment of puerperal sepsis without having that old offender, the curet, brought in. On the City Hospital service most of the cases are brought in on the ambulance. These we divide into two classes, one class where the abortion or miscarriage has occurred spontaneously, and the other where it has been induced. The induction cases are all criminal cases and I am sorry to say there has been a very marked increase in their preponderance during the past eighteen years that I have been on that service. The other class of cases are the spontaneous and invariably recover unless the curet has been used by the doctor outside before the case comes to the hospital. When the infection is from some other source than instrumentation, the results are more favorable and it is rare that one of these cases succumbs unless there is blood infection. The blood infections in my experience have shown a very high mortality and the cases where the abortion has been induced and the infection has originated in that way are almost invariably fatal. I feel that one of the greatest benefits we can do, in view of the fact that the proceedings of the meeting will be published subsequently, is to mention the curet only to condemn it. I feel that it should never enter into the conduct of the treatment of any case of postpartum or postabortive infection.

DR. MALCOLM McLEAN.—I would like to add one little word in defense of an old method of treating our puerperal cases. I am not willing that it should go out from the New York Obstetrical Society that it is bad obstetrics to make vaginal examinations. I think vaginal examinations are often valuable in detecting conditions which cannot be detected through the rectum, conditions which in themselves are going to lead to lesions which make foci for the invasion with which this evening's paper has been dealing. I think we are all agreed that the utmost care must be taken in

providing for such examinations, but I simply wish it not to go forth as the ultimatum of the New York Obstetrical Society that it is bad obstetrics to make vaginal examinations.

DR. JOHN O. POLAK.—There is very little to add in closing the discussion. In regard to Dr. Cragin's remarks about the posterior incision and drainage, I would say that the class of cases that we have applied this to have not been the class the doctor speaks of, where the infection has gone through the parametrium and met with no resistance there. The cases to which I was referring are those in which an active endometritis and metritis extended to the peritoneum and notwithstanding the application of the usual treatment with ergot, ice-bags and the avoidance of catharsis, etc., the peritoneal cavity became involved. There have only been three of them. In two we got upon incision a large quantity of seropurulent fluid with flakes of exudate in which streptococci were found. In one case we found no exudate. The interesting point to me was the fact that in these three cases, which showed a definitely advancing peritonitis this incision checked the same and changed it to a local pelvic peritonitis. I do not believe the incision is a good plan and I believe that it depends entirely upon a study of the individual case, but there are certain cases in which the patients show a definite pelvic peritonitis with a tendency to advance, which may be checked by incision, isolation and drainage.

In regard to exudates, in an analysis of 300 exudates made at the Long Island College and Jewish Hospitals, after abortions and after puerperal infections, it was found that only 22 suppurated and needed incision, showing that a little over 7 per cent. of these cases end in suppuration.

Regarding Dr. Brodhead's question about blood cultures—it has been interesting to note that in cases of thrombophlebitis it is exceptional to find a positive blood culture and if we expect to get a blood culture from the blood we must take the culture during the chill. I mean that in all the cases where a blood culture is taken in quiescence there is subsequently a sealing of the thrombotic defense and the bacteria are confined to that thrombus. In regard to ice, we use ice as a routine over the fundus of the uterus immediately following every delivery for the stimulation of contraction and retraction of the uterus. We used it first to the exclusion of ergot. Now it is used in combination with ergot.

We endeavor to conduct labor without making vaginal examinations in normal cases but I have seen two cases in the service of an associate of mine (a competent man) where the deliveries were spontaneous and both had a very virulent infection and I believe that this year there has been a hematogenous infection through the tonsils or wherever the port of entry may be. These cases have appeared incidentally in labors following grippe infections.

In regard to vaginal examinations I want to say but one word about them. I believe that the average normal labor can be conducted without making vaginal examination and that one can, without difficulty, note the advance of the head in normal labors, the



degree of dilatation of the cervix and by abdominal auscultation determine the location of the fetal heart. I do not want the idea carried away from here that vaginal examinations are not instructive, because they are. Every case that shows evidence that it is not progressing normally is given a careful surgical vaginal examination.

The majority of these cases that we see postpartum can be diagnosed from the history and from the findings without going into the vagina in the early stages of the postpartum condition, and I am very sure from what we have seen in a consultation practice among a large number of poor people that in the frequent examinations to which these patients are subjected by the attending physician, disturbance results and we rescue them by bringing them into the hospital where they do not have examinations and in the majority of instances they immediately get well.

DR. E. B. CRAGIN.—May I ask Dr. Polak if he would not teach his medical students the knowledge that can be gained by a vaginal examination during labor?

DR. JOHN O. POLAK.—We do teach all of our students to make vaginal examinations with gloves, with the vulva clipped, shaved, scrubbed and ioditized, but we teach them that the ordinary labor can be conducted by rectal examinations. We show them how much easier it is in busy practice to take a glove and go into the rectum rather than to scrub up and waste that valuable time. All of our men are taught just what Dr. Cragin has mentioned, namely, what can be gained by vaginal examinations, but we try to disabuse their minds as to the necessity of frequency.

DR. E. B. CRAGIN.—Mr. President, may I ask Dr. Polak one more question? Is he not afraid that some of the students when they go out and make rectal examinations will, without proper disinfection of the hands or without gloves, then make a vaginal examination?

DR. JOHN O. POLAK.—The only answer that I can make to that is that we have not had the experience that the larger clinics in New York have, but in our Out-patient Department we confined consecutively 4500 women in the last three years without a single infection. The men are so schooled that they dare not do it. We had to take drastic action in one case and expel a man for doing the very thing that he was not told to do, and from that time on we have had no trouble.

## TRANSACTIONS OF THE OBSTETRICAL SOCIETY OF PHILADELPHIA.

*Annual Meeting, February 7, 1918.*

*The President, DR. B. C. HIRST, in the Chair.*

DR. BARTON COOKE HIRST delivered the Presidential Address and spoke as follows:

It may be needless to state, but it would be ungracious not to do so, that I appreciate more deeply than I can express, the kindly feeling of my fellow members in conferring upon me the honor of a third term as President of the Society during the year that its fiftieth anniversary will be celebrated. If I leave the subject with this mere mention, it will be understood, I am sure, that no matter how long I dwelt upon it, mere words could not convey my gratitude for what will always remain one of the pleasantest episodes of my professional career.

It is unnecessary to indulge in a retrospect of what has been accomplished by our Society and others like it devoted to this special branch of medicine. Our members have had a creditable share in acquiring and imparting knowledge of all the conditions peculiar to women and have kept pace with the world-wide advance of the past half century.

I prefer to look ahead in endeavoring to sketch a program for the coming year's work and to speculate upon what subjects we may most profitably concentrate our attention, both in the immediate and more remote future. Our methods of clinical observation and of more abstruse investigation, it seems to me, must take different lines than have hitherto been followed. A broader view of the subject to which we have devoted our professional lives must prevail or the comparative aridity at present observable in gynecology will degenerate into a humdrum, rule of thumb practice without further progress, and without the justification that specialization should have in contributing knowledge otherwise unobtainable.

All the conditions peculiar to women must be studied in close correlation and the fundamental basis of this study must be the physiological fact that the central event in woman's life history is the process of generation, from which almost all of her diseases arise, by which they may be affected or on which they exert some influence.

If there is to be a specialization within our specialty, if any line is to be drawn, it should be, in my estimation, between clinical and laboratory work. The same man cannot possibly be proficient

in both. In the purely clinical work on the contrary, any cleavage, a too narrow specialism, has a tendency to limit knowledge, halt progress and diminish efficiency. This fact, too long ignored in America, is at last appreciated in the most progressive medical centers and will soon perforce become generally acknowledged. Coöperative investigation, collaboration with other special workers, will be the keynote of future research work. In almost every problem that confronts us, association with the internist, the general surgeon, the röntgenologist, the pediatrician, the pathologist or the physiological chemist will yield better results than if we work alone.

Leaving generalities and principles, what special subjects should engage our attention and how can we utilize the limited number of meetings in the year to the best advantage? The last question will be answered by our efficient program committee whose first meeting I had the privilege of attending. It was agreed that guests of distinction should be invited not once, but several times during the year. If we cannot all have the advantage of occasionally leaving our field of work to see what others are doing, we can thus get the stimulus of other viewpoints and a wholesome corrective of self-satisfaction.

To one subject it was agreed we should devote an evening—The Mammary Gland. This is something of an innovation but if we claim a knowledge of all the conditions peculiar to women surely this subject should make a part of our studies and in the broadest sense. We should possess not only a clinical familiarity with inflammatory conditions and a few minor abnormalities but we should be thoroughly familiar with the diagnosis of every pathological condition that may affect the female breast. These conditions are usually first presented to the physician dealing with women's diseases. He should have the widest clinical experience, the greatest ability in differential diagnosis and he neglects his opportunities and fails in his duty to his patients if he does not acquire an expert's skill in operative or other treatment.

Among the many interesting subjects that might claim our attention there are certainly three on which we all, I think, crave more enlightenment: The toxemias of pregnancy, especially their etiology and treatment; the end results of the operative or other treatment of cancer of the uterus; and the best operative treatment of cystocele in young, child-bearing women.

I, for one, would much like to hear the collective experience of our members on these points. We must also collaborate with our sister societies everywhere in the thoughtful consideration of how we may still further reduce the mortality of placenta previa and eclampsia which continue to take a greater toll of valuable lives than they should. We ought, I think, to seek an answer to this question: Why is it that half the women who apply to a physician for something peculiar to their sex are found to have injuries of the birth canal? Surely there is a defect in our present methods of dealing with these injuries of childbirth that might be corrected.

An interesting project of the program committee is to devote an

evening to the exhibition of rare pathological specimens: the combined collection of all our members could furnish some exceedingly instructive and unusual material.

In this connection I cherish the hope that we may induce some of the younger members of the Society to engage in literary research for which they have the time. Speaking for myself, I could vicariously present a few specimens the like of which I never saw before and I would highly appreciate exact information of what was known about such conditions.

There are some questions of public policy on which our voice should be heard. There is the midwife problem, for instance, which is more intelligently dealt with in Pennsylvania than elsewhere in America, if indeed it can be said to be dealt with at all anywhere else in the country except by the truly Podsnapian method of ignoring it entirely.

This community lags behind other cities in the intelligent coöperation of physician, nurse and social worker in prenatal care. We should try to awaken it to the necessity of contributing generous financial aid to this project. Some comprehensive plan should be evolved covering the whole city. At present sporadic attempts to do this work overlap in some localities, while others receive no attention at all.

Much more important than prenatal care is the postnatal care of mother and child. If, in coöperation with the Pediatric Society we could evolve a practicable scheme for a follow-up system extending over the first year after birth, including both mother and infant, incalculable good would accrue to the City in the preservation of life and health.

It seems to me that our Society could have no better justification for its existence in the public estimation than the creation of a committee to work in conjunction with a similar committee from the Pediatric Society to put this idea into effect. Every hospital and dispensary in the City treating maternity cases, all the midwives, the city nurses and the Visiting Nurse Society should be brought into a coöordinated scheme to diminish the mortality of the first year of life and to restore the health of the mother if as is so often the case it has been impaired by child-bearing.

We must not shirk the duty of dinning in the general physician's ears the necessity of routine examinations of pregnant women for the earliest signs of toxemia and for obstacles in the approaching labor; the importance of regulating the hygiene of pregnancy and the significance of uterine hemorrhage in the diagnosis of cancer.

Many other fascinating paths lie open before us along which to search for truth and greater light.

Like every one else we must feel the intellectual stimulus of this great epoch. If, by the peculiar character of our work we are excluded from active participation in the titanic struggle convulsing the world, we have a duty as inspiring as any; to conserve and improve the race; to do our little part in aiding the forces that will usher a new generation into a world better than we have known it



and to be made better still by the solution of social and economic problems that have troubled the minds of men since civilization began.

DR. CHARLES S. BARNES read a paper entitled

THE INDICATIONS, DANGERS AND CONTRAINDICATIONS OF  
UTERINE CURETMENT.\*

DISCUSSION.

DR. EDWARD A. SCHUMANN.—Dr. Barnes' paper covered a wide range. There is one phase of the situation which interests me. I refer particularly to the question as to whether or not the curet is to be used in the cases of retroversion, ovarian disease and the like, in which one is about to do a plastic operation or some abdominal procedure. Watkins, of Chicago, has recently promulgated the dictum that it is unwise ever to curet, excepting for such definite indications as polyp or retained secundines. The work of Hitschman and Adler, corroborated by Arthur Curtis, of Chicago, definitely disproves the disease of endometritis. Having cultured the entire mucosa of fifty or more uteri, he found the mucosa bacterially sterile in whom there had not been definite evidence of, or cellular tissue around the uterus. Cureting is never to be done in endometritis. But there have been reported in this Society many cases of early adenocarcinoma of the uterus, sarcoma, etc., which have been detected routinely in cureting. I have myself seen one or two cases and Anspach reported three or four. We have all come across the early malignancy accidentally and I think we should take middle ground. The curet in young women is worthless, but in old lacerations of the birth canal it may help by the detection of early malignant tumor which would not otherwise be recognized.

DR. F. HURST MAIER.—It is astonishing how infrequently we practice curettage to-day. Formerly the gynecic surgeon almost invariably preceded his abdominal operation with a curetment.

There are really very few indications for cureting the uterus. In acute infections it has no place and the gloved hand is a safe substitute in the removal of retained secundines. The thickened endometrium that formerly frequently provoked us to use the curet, we now know is only an incident of the normal menstrual cycle.

The works of Hitchman and Adler, Heep and others have demonstrated the constructive and destructive changes that take place in the uterine mucosa each month; and while the membrane is only 2 mm. thick during the quiescent period, in the premenstrual and postmenstrual phases it reaches a thickness of 5 to 6 mm., with tissue changes not unlike those that occur in a true inflammation.

Even in the treatment of chronic glandular and interstitial inflammation the results of curetment have been disappointing and only about 15 per cent. of the cases are probably cured.

\* For original article see page 940.

In the majority of the cases the pathology is in the walls of the uterus or extrauterine; and in some instances the endocrine system is undoubtedly the fault.

In the treatment of these cases, especially chronic gonorrheal endometritis, I get very much better results from the intrauterine application of a 40 per cent. formalin solution than I did from curetment.

Dr. Schumann's remarks concerning the value of curettage in the accidental discovery of early malignant disease are quite *à propos*; nevertheless, the fact that cancer of the uterus has occasionally been accidentally discovered as a result of curetment cannot influence us in determining the correct status of uterine curetment as a therapeutic measure.

Personally I believe that uterine curettage has an extremely limited use either as a means of diagnosis or as a therapeutic procedure.

DR. CHARLES S. BARNES (closing).—In summing up I did not mention the diagnostic value of the curet in the differential diagnosis in endometritis and incomplete abortion. I feel it has a field there. We cannot always detect infection when present. It may be in a corner of the uterus. I am afraid we do not always get all the endometrium away in cureting. In cases of bleeding from the uterine cavity we still hold, with good reason, that the curet may aid us in differential diagnosis.

DR. WILLIAM E. PARKE read a paper entitled

#### CESAREAN SECTION IN THE TREATMENT OF ECLAMPSIA.\*

##### DISCUSSION.

DR. GEORGE M. BOYD.—The toxemia of pregnancy and eclampsia is a field for great thought and I am glad that our President mentioned in his address the wisdom of including this subject as a part of this year's work. I believe that Cesarean section is only rarely indicated as a treatment for eclampsia. It has been said that the physician that resorts to Cesarean section in an eclampsia is a greater surgeon than an obstetrician. Many cases ante- and intrapartum can be treated satisfactorily by rupture of the membranes, forceps, veratrum viridi and morphia. The Stroganoff treatment has been satisfactory in my hands and recently the New York Lying-In Hospital reported satisfactory results with morphia. We know little about the etiology of this disease and probably as little about its treatment. The trouble begins in obscurity and often ends in disaster. This lack of knowledge explains the various methods of treatment suggested. Some years ago, I thought I could treat all cases by manual dilatation and forced delivery. All went well until I finally ruptured the lower uterine segment and then abandoned that method. At present our greatest good can be accom-

\* For original article see page 948.

plished by instituting prophylactic measures early in pregnancy and these failing, the arrest of gestation.

DR. EDWARD P. DAVIS.—Cases of eclampsia differ so widely that the safe rule is to study each patient individually and to meet the indications afforded by each case.

Convulsions are not necessarily the fatal element, for many recover after a large number of convulsions and others die without convulsions. Pregnancy need not be terminated because a patient has eclampsia, for cases sometimes pass through eclampsia undelivered, the pregnancy continuing and a living child being born.

In addition to the types of toxemia mentioned this evening, that which has its origin in the failure or perversion of internal secretion notably of the thyroid gland, is of considerable importance. These cases sometimes do very badly and pregnancy should sometimes be terminated prematurely or the patient delivered by section.

The most thorough study of eclampsia shows that the uniform treatment of this condition by operation has a higher mortality than that following the nonoperative treatment. Operation is indicated where the conditions for delivery through the vagina are all unfavorable, where mother and child are in comparatively good condition and the circumstances permit of prompt and skilful operation. The mother should not be subjected to operation for the sake of the child as it frequently perishes from toxemia.

Toxemic women frequently die from edema of the lungs followed by partial consolidation with extravasation of blood. Others become acutely maniacal. The prognosis in both of these conditions is grave.

After trying all methods of treatment reported by reliable observers, we get at the Maternity Department of the Jefferson Hospital the best results by bleeding, transfusion with salt solution, lavage of the stomach and bowel, the use of calomel followed by salines, keeping the patient between blankets, with thorough cleansing of the skin. If the patient shows signs of coming into labor, we assist vaginal delivery as best we can; if there is no sign of labor, we do not interfere. Section is very rarely indicated and very rarely practised, and would be selected under the indications already given. After delivery we have had good results by the injection of sterile horse serum in doses of 15 to 20 c.c. Prophylactic treatment is far more valuable and successful than the actual treatment of fulminant toxemia with or without convulsions.

DR. RICHARD C. NORRIS.—This is a very interesting and practical subject and when Dr. Parke closes his discussion I would like him to tell us the number of cases of eclampsia that he has treated by other means during the same period of time, as a matter of contrast. It goes without saying to men of experience in obstetric surgery that there is no fixed rule of treatment for all kinds of eclampsia cases. It is a mistake to dwell too much upon one symptom of the toxemia of pregnancy. The views of men of wise experience have crystallized and the analysis of that experience places Cesarean section pretty much where it belongs. I have worked this out for myself and we



believe that we will have to consider any plan of treatment from three angles. First, the character of the toxemia that has produced the convulsions; second, the condition of the patient at the time she is brought to your notice; and, third, as has been brought out particularly by Dr. Parke, the condition of the soft parts. Those who have had experience with eclampsia and the varying histories of cases, can recognize fairly well the hepatic, the nephritic, the intestinal, the ductless gland types and can recognize the case that is overwhelmed with toxines, with convulsion after convulsion and deep intervening coma. Any surgeon realizes that there are some cases so gravely complicable with destructive changes of the kidney or cardiovascular system that it would only hasten the end to choose Cesarean section. There are some cases, as we all know, so overwhelmed that no treatment will save them. The ideal treatment, of course, is prophylaxis, to terminate pregnancy before they reach this danger stage, but we will always have these gravest cases until we educate the profession and the laity in the proper care of pregnant women. As to the condition of the soft parts; just because a woman is a primipara is no indication for doing a Cesarean section without considering the other viewpoints, the character of her toxemia and the general condition of the patient. For multipara with a rigid birth canal the same holds true and we should approach these cases with the idea that the Cesarean section may be a wise treatment, and under some circumstances a very dangerous treatment. I saw to-day three gravely toxic pregnant women. One was jaundiced, had a splitting headache, marked eye symptoms, with no albumin or casts, blood pressure 165, the type of case for onset of convulsions. Her cardiovascular system was not seriously damaged. For a primipara of that character with rigid cervix I would do a Cesarean section, if she were in eclampsia. Another patient, pale, anemic, blood pressure 170, marked difference between diastolic and systolic, edematous, dropsical, numerous hyaline and granular casts—a typical nephritic type, Cesarean section would not be indicated even with rigid soft parts.

The third with beginning eye changes, granular casts, large quantities of albumin, headache, rising blood pressure, with a history of overeating and habitual constipation. None of these were eclamptic, but I mention them as different types. Preëclamptic conditions will often determine the obstetric or surgical treatment. Of two recent eclampsia cases one was vaginal, one was an abdominal section. For another recent case in her second pregnancy I induced labor. I had two years previously delivered her during eclampsia by Cesarean section. I mention these individual cases because we can all find cases in our practice that teach us not to treat all cases in one way if you want to get the best results. Dührssen had a mortality of 8 per cent. by vaginal section and advanced for that operation all the arguments Dr. Parke advanced to-night. He doubtless operated many times unnecessarily. His results were almost equal to Stroganoff's exclusively medical treatment. When Peterson read his paper, having grouped together all the abdominal Cesarean



sections he could find, the mortality was about 25 per cent. If you operate on cases *in extremis* you will have a very high mortality. The subject should be approached by studying the cases individually, trying to place them in the pathological and clinical groups to which they belong. Abdominal section has a distinct place in the treatment of eclampsia but it is not the only treatment even for all primiparæ, since its use should not be solely determined by convulsions, which after all, are only one symptom of the disease. Elective major surgery requires more than that one symptom.

DR. WILLIAM E. PARKE (closing).—Of course, I did not indicate in the paper that all cases of eclampsia are to be treated by Cesarean section. They are a very definite and rather minor group. The cases that are included in this paper for the most part had no prophylactic treatment whatever. They were brought into the hospital in the ambulance or patrol, already comatose, having had convulsions, many of them. Dr. Norris asked how many patients during this period had been treated otherwise. I am sorry I am not able to answer that definitely. A little while back I did go over all the cases that have occurred in the Episcopal Hospital since the beginning of the present method of keeping the card system has been inaugurated, and there were something less than 100 and these were treated in all ways, medically, obstetrically and a very few of them surgically, the mortality was 45 per cent. These cases, of course, represented a very serious type. They were brought in, in many instances moribund. If you have a chance to treat them prophylactically that is the thing to do. When they are brought in in the condition of which I speak the question is whether you shall get rid of the baby or whether you will treat the patient and let the pregnancy take care of itself. If the latter is the plan adopted, and that is the plan implied in the morphia treatment, why, of course, if you can show by the morphia treatment that you get just as good results that is much the preferable way to do. I grant that. I have tried the morphia treatment time and again and have usually been disappointed with it. The patients either don't get over their convulsions and die; or if finally the baby is delivered I have added difficulty in securing bowel movement and I think I lean more heavily on Epsom salt in their treatment than on any other factor and feel that the patient is making better progress when the bowels are really moved than by any other single procedure. Of course, when they are operated on that does not exclude any sort of medical treatment. Part of the routine treatment I did not mention in the paper is to wash out the stomach and leave 2 ounces of Epsom salt and one drop of croton oil in, wash out the bowel until thoroughly clean; give an injection into the vein of Fisher's solution and if pressure is still high and pulse rapid give them veratrum viride and anything that you would do in addition to this. But if you decide to take away the baby the question is whether you shall do it quickly and cleanly by a Cesarean section in a patient with an undilated birth canal, or endeavor to drag it through an undilated canal. Many times these patients are not in labor and if you come to that

conclusion it is my contention that the better way is by the Cesarean operation.

DR. ALFRED HEINEBERG read a paper entitled

HEMORRHOIDS OF THE URETHRA.\*

DR. STEPHEN E. TRACY read a paper entitled

THE POSSIBILITY OF MISTAKING THE REMAINS OF THE HYPOGASTRIC  
ARTERY FOR A URETER.†

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TRANSACTIONS OF THE BROOKLYN GYNE-  
COLOGICAL SOCIETY.

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*Meeting of February 1, 1918.*

*The President, DR. RALPH M. BEACH, in the Chair.*

DR. JOSHUA RONSHEIM reported, with the specimen, a case of

VELAMENTOUS INSERTION OF THE CORD, WITH TWINS.

"I saw this case about one o'clock this morning and was told by the doctor in attendance that she thought it was a placenta previa. The patient had had three previous normal labors, and was due in the present pregnancy about February 22, 1918. About midnight she had a sudden gush of blood followed immediately by slight labor pains and when examined by the attending physician about one-half hour later she found two fingers dilatation and thought she felt the placenta inside the cervix on the left side, but on account of the increased bleeding produced by the manipulation she refrained from further examination. On examination one-half hour later I found an apparently normal abdomen at full term with a good fetal heart in the left lower quadrant. The cervix was effaced, os three fingers dilated, and a slight amount of bleeding present, which was increased by the examination. Vertex presenting at the brim. One cubic centimeter of pituitary extract was administered producing strong pains and shortly after a stillborn, exsanguinated female baby weighing 4 pounds was born. Examination now revealed a second sac bulging into the pelvis; this was ruptured and soon thereafter a second living female baby weighing 7 pounds was born. The specimen shows one large placenta, two sacs and two cords. The

\* For original article see page 912.

† For original article see page 947.

cord of the stillborn baby is smaller and terminates about 5 inches from the placenta where it spreads out in the membranes into numerous blood-vessels. One of these blood-vessels was torn at its bifurcation when the membranes ruptured, causing the hemorrhage at the onset of labor and the death of the one baby."

DR. JOHN O. POLAK reported

THREE CASES OF OVARIAN CYST WITH TWISTED PEDICLE  
COMPLICATING PREGNANCY.

"These have come under my care in the last three weeks. They have only one interest and that is the association with pregnancy, all occurring on the same side the left which is also interesting. This can perhaps be accounted for by the torsion of the uterus toward the right. All were primary cases with definite familiar symptoms; sudden abdominal pain and nausea, subsiding under morphia and rest. The condition may go unrecognized, at the first attack. So, after a day or two in bed, the patient got up and resumed her activities and then a second attack, the twist increasing the size of the tumor so that each patient was able to make her own diagnosis. I have not had three cases follow in such rapid succession before, all occurring on the left side. All the tumors were removed and all have gone on with the pregnancy uninterrupted, which was beyond the fourth month when the corpus luteum has fixed the structures within the uterus. Such conditions occurring at that time have no effect upon the pregnancy."

DISCUSSION.

DR. PFEIFFER.—"I had one case of ovarian cyst complicating pregnancy in the last three months. It was a first pregnancy and was terminated a week or two before term by accidental hemorrhage. The cyst was on the right side and not diagnosed, but the attack was thought to be appendicitis. A general surgeon saw that case and with the tenderness in the right flank we decided upon operation. We did not get pus but we did get a cyst. The hemorrhage was pronounced and the woman aborted in forty-eight hours. I was not so successful as Dr. Polak.

DR. BEACH asked if there were signs of obstruction in the cases.

DR. POLAK.—There were marked adhesions in the intestines and several twists in the pedicle, in fact successive twists. There were no symptoms of obstruction.

DR. FREDERICK C. HOLDEN reported

AN UNUSUAL CASE OF INCARCERATED PREGNANT UTERUS.

Mrs. Mary R., aged thirty-six, married twelve years and having five children. She entered the Greenpoint Hospital on Dec. 26, 1917, with pain in the left lower abdomen and frequency and burning upon urination and incontinence. She had a sudden onset of pain. Nov.

27, 1917, 4.00 A. M. when she was awakened by a sudden sharp pain in the lower left abdomen, with a great desire to urinate, but could not, and did not urinate all that day. In the evening a doctor was called who diagnosed it as "cold in the bladder" and gave pills. Patient did not sleep all night because of pain in the abdomen on left side, and desire to urinate, but could not. Patient urinated the following day at noon. Sunday following onset patient had incontinence for the first time, which has been present ever since. Symptoms have not changed since the onset of the trouble. Patient has lost considerable weight, sleeps poorly and is very restless at night. History: Menstrual: Onset at sixteen years of age, regular every twenty-eight days; three-day periods, moderate flow, premenstrual pain for one day. Patient has never had menstrual disturbance. Patient does not feel pregnant. She was married twelve years, had five children, all normal labors, delivered by doctor at home; last labor three and one-half years ago; no miscarriages. Previous illnesses and family history negative. Examination showed an elderly looking emaciated female, who has appearance of being very ill. Weight 187½ pounds. Before onset of sickness patient weighed 200 pounds. Marked pyorrhea of lower teeth; has no upper teeth. Tongue slightly coated; lips cracked. Heart and chest normal. Blood pressure 120/8. No evidence of arteriosclerosis. Abdomen flabby, pendulous; entire lower abdomen filled with tumor mass which is regular in contour, freely movable, nonsensitive and consists of a pregnant uterus. There is a small but definite umbilical hernia. Lax pelvic floor with proctoceles; in cul-de-sac and at both sides is a cystic tumor filling the pelvis; finger carried into vagina above symphysis fails to palpate cervix, which is very high. Rectal examination showed a cystic tumor, easily palpable, filling lower pelvis. Urinalysis: Dec. 26, 1917. Albumin xx, no sugar. Microscopic examination shows many pus and red blood cells and an occasional hyaline cast. Blood count showed leukocytes 16,000 per c.m.; polynuclears 82 per cent.; 16 per cent. small lymphocytes. Diagnosis: Ovarian cyst complicating pregnancy; subacute cystitis due to pressure of pelvic tumor; umbilical hernia.

January 2, 1918. Patient has been under observation since Dec. 16, 1917. For the first four days temperature has been 100° F., and has now been normal for four days. Laparotomy for ovarian cyst advised. Operation: January 3, 1918. Anesthesia time forty-five minutes. Abdomen opened by a left median incision extending from the symphysis to a point about 3 cm. above and to the left of the umbilicus. A cystic tumor occupied the entire lower abdomen and filling the true pelvis. The tumor was delivered from the pelvis and found to be a symmetrically enlarged uterus. It did not have the appearance of a normally pregnant uterus, its color was pale, almost gray and consistency more cystic than normal pregnant uterus; no small parts palpable.

It was decided to open the uterus upon the basis of the diagnosis of incarcerated retroflexed and pregnant uterus with hydramnios. The interior uterine wall was incised for a distance of about 8 cm.



and a fetus of about 17 cm. long weighing 332 grams was delivered with placenta and membranes. One cubic centimeter of pituitrin was given hypodermatically. Uterus was closed with interrupted No. 2 chromic catgut sutures, including peritoneum, myometrium and down to endometrium. The bladder was found to be enlarged and crowded above the symphysis, its walls greatly thickened and enlarged. The abdomen was closed, using No. 2 plain catgut for peritoneum, everting its edges. The upper half of the peritoneal suture included fascia since it was greatly thinned out at this point. Four figure-of-eight silk worm sutures were placed through fascia and out through the skin. Skin edges were approximated with skin clips.

*Postoperative Record.*—January 7th. On evening of second day patient began to vomit dark bile-stained fluid. Lavage with soda bicarbonate solution and nothing by mouth for twelve hours. On the morning of the third day pulse was 130, weak, temperature 99° F., respiration 28. Abdomen was greatly distended but no pain, Patient looked very sick. Blood count was 14,600 with 78 per cent. polynuclears. Harris drip of 5 per cent. glucose solution was started and hypodermoclysis of 1000 c.c. of normal salt solution was given. On the fourth morning postoperative, patient felt much better, distention relieved, fluids by mouth. During the night patient retained 1000 c.c. of glucose solution, temperature is 101.6°, and pulse 122. January 8. Skin clips removed; lower angle of wound is gaping for about 1 cm. and is infected. Tr. Iodine applied. January 11. Patient irrational and toxic with urinary incontinence; pulse 116 with very poor volume. Blood pressure  $70/50$ . Impossible to obtain twenty-four hour specimen of urine to determine urinary output, because of incontinence; 700 c.c. of saline solution given at 5 P. M. intravenously. Digalen  $\text{mxxx}$ , then  $\text{mxx}$  every four hours, alternating with caffeine sodio-benzoate gr. iii, hypodermatically every four hours. January 11. 600 c.c. normal salt solution given intravenously at 9 P. M. Jan. 12. Patient in coma, respirations 40, pulse 120, and blood pressure  $70/50$ . At 11 A. M. patient died. Clinical cause of death: Uremia, due to ascending kidney infection.

*Autopsy Showed.*—Partial intestinal obstruction due to adhesions between the omentum of the transverse colon and the hysterotomy wound. Right kidney: hydronephrosis, the pelvis greatly dilated and filled with urine; four cysts in kidney substance, no kidney tissue substance left at all. Weight before puncturing cysts 418 grams. Left kidney: weight 407 grams, pelvis and calices greatly dilated and filled with pus; kidney substance diffusely inflamed with areas of fatty degeneration; enlargement is probably compensatory hypertrophy. Bladder wall greatly thickened, mucous membrane greatly engorged and bladder capacity greatly diminished.

*Diagnosis.*—Partial intestinal obstruction; right hydronephrosis; left pyelonephrosis; chronic cystitis.

*Conclusions.*—There are two errors to be charged in this case. First, an error in diagnosis, second, an error in judgment. That abdominal hysterotomy is not devoid of danger, is illustrated in the

autopsy findings in this case, which shows the partial obstruction due to the transverse colon being adherent to the hysterotomy wound. This accident might be obviated by doing a hysterotomy in the lower anterior uterine segment and covering the wound with the bladder which has previously been dissected from the uterus.

The case was of special interest to me for the reason that I had not previously met with this type of incarceration. All of the cases I had previously had any dealings with were of the kind that terminated about the third month of pregnancy.

#### DISCUSSION.

DR. J. O. POLAK.—In the presence of a retroflexed incarcerated uterus, most of the cases give this symptom of dysuria. My own experience covers about ten cases and in almost all of them either Dr. Matthews or I have been called because of retention, and this was the first notice we had that anything was wrong with the pregnancy. The physical findings always show the same picture, *i.e.*, the cervix high above the pubes with an elastic cystic tumor in the cul-de-sac. These cases are not infrequent and most of them terminate themselves by pulling the uterus up out of the pelvis or by spontaneous abortion within the first six months. The next point is why the doctor did a hysterotomy. In four of the cases seen by me, which were all advanced nearly to the sixth month and resisted postural and manual attempts at reposition, we found that as soon as the abdomen was opened and the hand passed down we could raise the tumor up and see the uterus take its natural form; the color was not normal at once but after the circulation was re-established it took only a few minutes for the uterus to become normal in color. These cases all went to term and were delivered spontaneously. The difficulty is the differential diagnosis between ectopic and this condition before the fourth month because of the amenorrhea, abdominal pain, and metrorrhagia, all of which point strongly to ectopic. Hysterotomy is not devoid of danger, and I am glad Dr. Holden has brought out this point because Dr. Deaver of Philadelphia, is emphatic in stating otherwise. We do get adhesions. I had one case last summer which almost required a second opening where there were symptoms of obstruction, but by lavage and care we relieved her. I had the privilege of operating upon this patient again this year and will report on the case later. In the condition reported by Dr. Holden there are a few salient points worth remembering. First, the diagnosis is not difficult; dysuria is frequently the first sign to call attention to the condition; second, most of these incarcerations pull themselves out of the pelvis and those which do not can be helped by anesthesia, posture and an abdominal incision which will let it rise and the case may go to term; and third, hysterotomy is not without danger.

DR. JUDD.—The error in diagnosis brings to mind a case I reported here some years ago where I had done an interposition operation and the patient died.

I was fortunate enough to get an autopsy and we found a cystic kidney on one side, a stone in the opposite kidney and two stones in one ureter. In my first Cesarean section at the King's County Hospital, a case I lost, we found at autopsy that the omentum and transverse colon were adherent to the wound. I had discovered while doing a myomectomy at the Long Island College Hospital, for the removal of a small fibroid, which was not larger than the end of a thumb, there were not more than two sutures in the uterus, but there were adhesions of the small gut to the wound causing complete obstruction which was relieved at the operation and the patient recovered. The performing of a hysterotomy without considering the dangers is not good surgery in spite of what Dr. Deaver says. I do most of my work through the vagina.

DR. CARY.—Dr. Holden is to be thanked for bringing up this very interesting case which ended disastrously. I, too, have found it difficult to differentiate between this pregnancy condition and ectopic. I remember two instances where the diagnosis was very difficult. Ectopic pregnancy, however, rarely goes so long without very acute symptoms, and in ectopic the cervix is not so high nor pushed so anteriorly as in the incarcerated condition. I wonder why Dr. Holden deferred operation so long after the diagnosis was apparently made, although it did prove to be an error.

DR. HOLDEN.—In answer to Dr. Polak's question regarding the operation of hysterotomy in this case. It was the first time I had come across an incarcerated uterus of such a size, there were no small parts palpable, it was a question whether the uterus was filled with blood, it was very cystic, the x-ray had not demonstrated a fetus. I think she would have died any way judging from what we found at the autopsy. In answer to Dr. Cary's question, as to the reason for waiting. We think at the Greenpoint Hospital that we do better by waiting, it saves more lives than by operating early, it gives the patient a better chance.

DR. H. ALBERT WADE then read a paper entitled

#### THE CONSERVATIVE TREATMENT OF THE DISPLACED UTERUS.\*

##### DISCUSSION.

DR. JUDD.—I have heard a great deal of Dr. Wade's non-anesthetic operations. Am I to understand that Dr. Wade does not use local anesthetics? I should like to know if his work has proven satisfactory, and if he has done a sufficient amount of it to form an opinion as to results. My own results even with the use of anesthetics are unsatisfactory, particularly on the posterior vaginal wall, where I often get ragged surfaces. In amputation of the cervix I have practically abandoned the old circular incision except where I wish to do a quick operation. As to the Sturmdorf method, I have never had the courage to do this with a local anesthetic though I have no doubt it could be done without very much pain. I

\* For original article see page 936.



find that my work on the posterior wall is not satisfactory, even with an anesthetic. Dr. Wade speaks of the motility of the uterus. I feel that changing the position of the uterus from a pathological to a nonpathological one in the cavity by operation upon the uterosacral ligaments even through the abdomen, is unsatisfactory. I feel that in cases done according to the Gilliam or its modification, the Simpson-Gilliam we do not get a true position with motility, as we should have. I think the Webster-Baldy operation more nearly approaches the normal but we know the objections to that operation. In my judgment there is only one operation for these conditions and that is the old-fashioned Alexander. I should like to ask Dr. Wade if he has any guides for the endocrine therapeutics. There is one type of retroversion of the uterus which I think we all know should be let alone, that is the congenital type. We see it in married and unmarried women, where there is a short anterior wall. In women who have had children the uterus will return to the normal and the patient suffers no particular harm.

DR. POLAK.—I have been keenly interested in Dr. Wade's work for a number of years and have read what he has written of his plastic surgery in the case. I have always taken gynecic surgery as a more serious matter than something to be dealt with in such a way. Neither have I been able to gather from his paper exactly what class of cases he is dealing with in his corrective work. We look upon displacements, as of two classes, those that we can cure with the pessary and those that require a combination of operative methods. One statement he makes is at variance with my experience and that is that he amputates the cervix and then reposit the organ with a pessary. My experience is entirely different from that, in that one cannot amputate the cervix without shortening the vaginal wall. A pessary as I understand its action, has its posterior bar resting in the fornix and the posterior vaginal wall and a pulley-like action over that bar pulls the cervix backward. If we obliterate the fornix as we must do by amputation we lose the pulley-like action. Another point in this recital in which I differ with him is in relation to displacements. Most patients with displacements suffer from subjective and objective symptoms of pathology outside of the uterus, in their parametrial tissues, a parametritis postica is always associated with endocervicitis and these cases do not bear the pessary. Almost all of them need more than reposition. The class of cases that answer best to this treatment are postpartum retroversion where there is a movable uterus in the child-bearing women. Most of the cases that come to us have lesions outside of the uterus, in the ovaries or other tissues. Dr. Wade speaks in a casual way about the anterior and the posterior wall. It is not a casual matter. It seems to me that the most difficult proposition we have is plastic surgery and I do not see how it can be successfully done in the way he suggests. In Berlin it was interesting to see the number of parametric cases. The proportion was so much greater than we see here. When we went back a second time we found it was the custom for the women to come in off of the street



and be curetted on the examining table without preparation behind half-drawn curtains; a little gauze was placed in the vagina and the woman was told to come back in eight hours, hence she was on her feet from the time of curetting and an exudate formed. One thing that interested me was the devices they used for absorbing exudates. They would have the women lie upon couches with bags of mercury on bags of hot sand in the vagina for hours at a time. They were cases of low type of infection and cases of parametritis following the cureting. I cannot conceive that it is safe and that it should go out from this society that it is our practice, to do plastic work in the office and allow the patient to go home and be on her feet. I want to take exception to it as good teaching.

DR. WADE (closing).—As to anesthesia, we all appreciate the fact that the cervix has very few sensory nerves. If the patient has pain during a repair, or amputation of the cervix it is due to the pulling on the cervix and not from the cutting or suturing of the tissues. If you have a uterus where the ligaments are not relaxed, or the caliber of the vagina not sufficiently large, it is not possible to do a repair without an anesthetic. If you are careful about asepsis and careful about hemostasis, the patient does not suffer from discomfort subsequently. Rigid asepsis should always be observed. In old relaxed posterior vaginal walls, in 50 per cent. of the cases, you can dissect the mucous membrane from the underlying fascia without pain and then bring together the fascia without chromic catgut sutures. The anterior wall of the vagina is more sensitive than the posterior.

As to glandular therapy, I do not follow any particular custom. In young women with infantile uteri, the hypodermic injection of corpus luteum every five days for a period extending over two months, will often help the development of the uterus. In postpartum retroversions and prolapsis, with large bodied uteri, the thyroid or pituitary extract will at times be of service. In doing these operations it is essential that the patient must have absolute confidence in the doctor. I have noticed when there were several doctors present the patient was apt to be nervous, making the work of the operator more difficult. The patient must not be aware of the particular time or day of the operation. For this reason the operation is not done until the patient has made several visits to my office. In procidentia of the uterus, only a portion of the hypertrophied cervix is amputated, and the remaining portion is held in the hollow of the sacrum by means of a pessary.

## TRANSACTIONS OF THE NEW YORK ACADEMY OF MEDICINE.

### SECTION ON GYNECOLOGY AND OBSTETRICS.

*Stated Meeting, Held January 22, 1918.*

(PROGRAM CONTRIBUTED BY THE STAFF OF THE HARLEM HOSPITAL.)

DR. WILBUR WARD, *in the Chair.*

DR. IRVING S. HAYNES presented a report of two cases of

#### WERTHEIM OPERATION FOR CARCINOMA OF CERVIX.

CASE I.—This patient, a colored woman, thirty-six years of age, entered the Harlem Hospital on April 2, 1917. Her family and previous history were negative. Menstruation began at the age of fourteen years, was of the twenty-eight-day type, lasting three or four days. The flow was considerable and painless. The last menstruation occurred on February 1st. The patient has had one child, a normal puerperium, and no miscarriages.

For the past three months she has had irregular bleeding between periods, pain in the right sacral region and a whitish vaginal discharge. For the past two days bleeding has been severe and the patient feels weak. She has some pain on urination and urinates once at night. There is no loss in weight. At the time of admission her temperature was 100.6°; pulse 128, and respiration 28.

Physical examination was negative with the exception of the pelvis. There was a moderate discharge of foul bloody fluid. The cervix was filled with a cauliflower mass as large as a lemon. Anteriorly this mass was ulcerated. There was apparently no involvement of the vaginal walls, bladder, or rectum. The uterus and adnexa were free and apparently not involved. The urine was normal except for a few red blood cells. The white blood cells number 12,000; polymorphonuclears 72 per cent. and lymphocytes 28 per cent. The cystoscopic examination showed a tight external meatus; the bladder normal in appearance. There was no edema of the trigone. The ureteral orifices were normal. The proctoscopic examination showed a normal rectal mucous membrane.

The diagnosis was carcinoma of the cervix.

On April 9, 1917, a complete abdominal extirpation of the uterus, adnexa, parametrial tissue and upper third of the vagina was done

after the technic of Wertheim. First the cervical mass was thoroughly curetted away and full strength tincture of iodine freely applied. A handful of tissue was thus removed. The anterior and posterior lips of the cervix were sutured tightly together over a packing of iodoform gauze. The vagina was swabbed with tincture of iodine. After clearing out the uterus and the rest of the tissues, the peritoneum was sutured entirely across the pelvis completely closing the peritoneal from the vaginal region. A small iodoform wick was left in at the upper part of the vagina and reaching into the pelvic space beneath the peritoneum. Recovery was rapid and uneventful. The abdominal wound healed per primam.

The patient reported back for treatment on April 30th, May 13th and 18th and June 15th, since which time we have been unable to trace her. When lost sight of there was no vaginal discharge or any evidence of a return of the growth.

CASE II.—This patient, thirty-one years of age, a native of the United States, was admitted to the Harlem Hospital on September 27, 1917.

Her family and previous history were negative. Menstruation began at the age of thirteen, was of the thirty-day type, lasting three or four days, and was painless. She had continuous bleeding for the last four months, ever since a miscarriage which occurred in May. She passed large clots and had some pain which radiated downward. Examination was entirely negative except for the pelvic region. The cervix was taken up by a tumor mass which mushroomed out like a cauliflower into the vaginal vault and involved the upper third of the vagina. The mass bled easily on touch. The tumor was immovable and pain was caused by attempts at movement. The tumor was about  $2\frac{1}{2}$  inches in diameter. The body of the uterus and the adnexa could not be made out as the abdominal wall was rigid. By rectal examination the tumor was felt to be close to the rectal wall which was movable over the tumor. The parametrial and pararectal tissue was infiltrated. The urine showed a trace of albumin, but no casts. The white blood cells numbered 10,500; polymorphonuclears 79 per cent.; red blood cells 3,000,000 and hemoglobin 65 per cent. Smears were negative for gonococci. A three plus Wassermann reaction was obtained.

The diagnosis was carcinoma of the cervix involving the parametrium.

At operation on October 1, 1917, all the friable tissue was curetted from the cervix, and the surface swabbed with tincture of iodine. Through a median laparotomy incision a complete removal of the pelvic genital organs, with the upper third of the vagina was done, following the Wertheim method. Care was taken to remove as much of the parametrial tissue as possible. The pelvic peritoneum was closed over a small iodoform wick left in the divided vagina.

The pathological diagnosis was carcinoma of the cervix.

The wound healed by primary union and the patient recovered without incident.

On January 20, 1918, the patient was looked up and found doing

her work without inconvenience. She says that she has a good appetite but that her bowels are constipated for which she takes a cathartic once or twice a week. She has no symptoms except a slight whitish discharge. She has no bladder symptoms. The surroundings were such that an examination was impossible.

DR. H. C. FALK made a report on the

#### PREVENTION OF POSTOPERATIVE RETROFLEXION FOLLOWING OPERATION FOR PUS TUBES.

Before taking up the résumé of the cases on the Harlem Hospital service I should like to discuss briefly the probable causes of retroflexion following the removal of pus tubes, that is, tubes which actually have pus in them and are bound down more or less to the structures of the pelvis. The uterus is congested, enlarged and infiltrated, thus making it much heavier than normal. The pus tubes stretch the broad and round ligaments and they are also infiltrated with an inflammatory exudate. When the uterine end of the tube is excised, the origin of the round ligaments is frequently cut. The increased weight of the uterus, the stretching of the round and broad ligaments combined with the excision of the round ligaments at their origin, all tend to favor a posterior displacement of the uterus.

The pus tubes when removed leave a large raw area in the posterior culdesac, on the sigmoid and the posterior surface of the uterus, which can rarely be covered by peritoneum. It cicatrizes and when the connective tissue contracts the uterus, being large and having very lax ligaments, tends to be drawn to a posterior position.

Dr. Cherry of our Service attempted to transplant omental fat to cover in this raw surface but found in animals that the fat was absorbed and replaced by dense connective tissue.

Various means have been adopted to prevent a retroflexion from these causes.

We have had on our service in the last 200 cases, fifty-four cases with large pus tubes which were removed. Hysterectomies were performed on five of these cases. Two died and twenty cases have been lost trace of, leaving twenty-seven cases that have been followed. A lock suture of the broad ligament was performed in eight of the cases, with no special procedure to prevent retroflexion. Five of these uteri remained anterior, and three were retrodisplaced. In three cases mass ligation of the broad ligament was done; in all three the uterus remained anterior. In two cases the broad ligaments were plicated; they were equally divided, one anterior and one posterior. In one case the round ligament was brought in front of the uterus. This case showed a retroflexion. In three cases a Gilliam operation was performed; in an equal number a ventral fixation and in one a Coffey suspension. All seven of these cases showed the uterus to be well anterior.

To summarize: in nineteen cases no definite procedure to prevent retroflexion was carried out. Seven of these cases had a posterior



displacement. In eight cases in which a definite procedure was followed only one had a posterior displacement.

From our observations in this series of cases we are led to believe that some method of suspension or fixation should be used to prevent a postoperative retroflexion where pus tubes have been removed.

DR. ARNOLD STURMDORF.—To discuss this paper involves a consideration of all the etiological and corrective phases of all uterine retrodisplacements and I will touch upon one phase only, which was elaborated in my paper on "Congenital and Acquired Retroposition" read before this section and published in the AMERICAN JOURNAL OF OBSTETRICS AND DISEASES OF WOMEN, 1916, No. 3.

There is a congenital form of retroposition normal to a certain type of skeletal contour and presenting the compensatory resultant of unstable intraabdominal dynamics. Such a retrodisplacement should not be converted into an anterior position. With normal spinal contours, the axis of the abdominal and pelvic cavities form almost a right angle, while in the stature under consideration there is a marked flattening of the sacrovertebral angle resulting in an approximation of these axes toward the vertical, so that the thrust of intraabdominal pressure is expended in a more direct line on the pelvic viscera. This flattening of the sacrovertebral angle is regularly evidenced by a corresponding obliteration of the normal lumbar curve and the measure of its resultant approximation to the vertical constitutes a pathognomonic index in differentiating congenital from acquired displacements of the uterus. To obtain the measure the patient with the back exposed, assumes her natural standing attitude while the edge of an ordinary 18-inch desk ruler held vertically in contact with the most prominent spinous processes of the dorsal and sacral convexities, spans the intervening lumbar hollow. The distance in millimeters from the deepest point of this hollow to the edge of the ruler represents the index. An interval of 30 mm. marks the extreme minimum compatible with normal anteversion of the uterus; *from 25 mm. down the existence of congenital retroversion may be positively predicated in nearly every case.*

A uterus congenitally retroverted before conception will invariably resume its retroverted position after delivery. It must be emphasized that congenital retroversion as such is essentially only a part of the compensatory adaptation of the pelvic contents to abnormal static conditions through unstable spinal poise; that the depth of the lumbar hollow is the relative measure of the sacrovertebral angle; that the degree of sacrovertebral angulation determines the dip of the pelvis and that a certain degree of such pelvic dip is essential to the normal topography of its contents.

In short, congenital retroversion is a compensatory necessity and it follows that any procedure that converts such a retroversion into an anteversion converts a compensated into a decompensated visceral equilibrium within the pelvic cavity.

DR. STEIN.—It is a very difficult question to determine whether a uterus is congenitally retroverted or not. When we see a woman for the first time with bilateral pyosalpinx it is difficult to say that a

retroversion which is present is congenital when it may just as well be due to the pathology present as a result of the pus tubes.

I think it ought to be emphasized in order to *prevent* a retroversion *after* an operation for pyosalpinx, that we should suture the broad ligaments as Dr. Falk has described. We know that if we do an operation for pyosalpinx the whole area around the uterus is swollen, inflamed and edematous and the ligaments are stretched and if we take out the cause of all the swelling and edema, the uterus and other parts will return to their normal size. Now the uterus may take a retroverted or a retroflexed position due to relaxation of the ligaments. So far as I know there is nothing said in the textbooks on this point but I think it is a very good plan to do as Dr. Falk describes in all cases.

DR. FALK, in closing.—The chief point I was attempting to bring out was not the correction of retroflexed or posteriorly displaced uteri *per se*, but rather a method of preventing a posterior displacement of a normally placed uterus, after the removal of large pus tubes. We have an inflammatory area exposed in the posterior culdesac, on the anterior surface of the sigmoid and the posterior surface of the uterus, which inflammatory area, on healing, tends to contract and draw the uterus into a posterior position. It was to prevent this type of posterior displacement that the various methods referred to were used.

DR. GEORGE L. BRODHEAD reported

#### TWO CASES OF EXTRAPERITONEAL CESAREAN SECTION FOR CONTRACTED PELVIS.

CASE I.—This patient, a negress, primipara, eighteen years of age, was admitted to my service at the Harlem Hospital, April 12, 1917. The family history was negative. The personal history showed that the patient had had scarlet fever and measles during infancy, but otherwise had been perfectly well. Menstruation began at the age of sixteen years, was always regular, of the thirty-day type, lasting three days, painless in character and moderate in amount. The last menstrual period occurred July 11, 1916 and was normal in all respects. The patient expected to be confined April 18, 1917.

Physical examination showed a slender, adult female. The heart, lungs and breasts were negative. The uterus was enlarged to the size of a full-term pregnancy. Contractions were present. The presentation was vertex; the position R. O. A. The fetal heart was heard in the right lower quadrant. The measurements were: interspinous 23.5, intercrystal 25.5, external conjugate 18.5. The labor was protracted. A number of vaginal examinations had been made. The large head remained above the brim making interference necessary.

Operation was performed on April 18, 1917, following the technic recommended by Dr. Casassa, assistant surgeon at the Harlem Hospital. A median incision was made just to the left of the navel, 2 inches above and 4 inches below the umbilicus, extending

to the posterior sheath of the rectus and the peritoneum. A continuous lockstitch suture of plain gut was passed around the parietal and uterine peritoneum, so as to form an enclosed area 6 inches in length, oblong in outline. An incision about 5 inches long was made into the uterus through this enclosed extraperitoneal layer. The membranes were ruptured, the child removed and the placenta was extracted. The uterus was unusually long and narrow and there was moderate hemorrhage, the oozing coming principally from the lower uterine segment. The uterine cavity was packed with iodoform gauze, and the wound sutured with No. 2 chromic gut. The peritoneum was closed with plain catgut, the fascia with chromic gut and the skin with silk. The baby was born in good condition and weighed  $9\frac{1}{2}$  pounds. The time of the operation was thirty-three minutes.

*Subsequent Course.*—For four days the patient had a temperature of  $104.8^{\circ}$ . On the fourth day the wound was dressed and a small amount of seropurulent discharge was found coming from the upper and lower angles of the wound. On the sixth day after operation, the patient had a temperature of  $103.8^{\circ}$ . Vaginal examination was negative. The patient then made an uneventful recovery, leaving the hospital in good condition a few weeks later.

Examination eight months later reveals an abdominal scar about 8 cm. long, one-third above and two-thirds below the umbilicus. The uterus is firm and suspended, or possibly fixed, to the abdominal wall. The cervix is closed, firm, and high up; the fornices of the vagina are shallow.

The advantage claimed for his method is that the general peritoneal cavity is not entered at any time, the child being extracted through an area which has been closed off from the general cavity by the suturing carried out in the early part of the operation.

CASE II.—This patient, white, twenty-five years of age, para-i, gave a negative family and personal history. She began to menstruate at the age of sixteen years, was always regular, every thirty days, lasting three days, profuse in amount and painless in character. The last menstruation occurred March 1, 1917.

On the morning of December 1, 1917, the patient was examined by a physician who told her she was over term and labor would have to be induced.

She was anesthetized and an unsuccessful attempt was made to insert a bag. At the same time a dose of pituitrin was given hypodermically. She was in labor for forty-eight hours having contractions every five or ten minutes, and during this period was examined by five different physicians.

The patient was admitted to the Obstetrical Service of the Harlem Hospital at 10.00 A. M., December 3, 1917. She was in poor physical condition, exhausted, emaciated and very poorly developed.

Examination of the heart, lungs, breasts and abdomen were negative. The uterus was enlarged to about the size of a nine months' pregnancy, oval in outline, and feeble contractions lasting from fifteen to twenty seconds were present. The vertex presented above



the brim; the position was L. O. A. The fetal heart was heard in the left lower quadrant, the rate being 140. The cervix was medial, soft, thick, and  $1\frac{1}{2}$  fingers dilated. The symphysis pubis was very deep, and the space between the pubic arch and the sacrum was very small.

*Measurements.*—Interspinous 23.5 cm., intercrystal 26 cm., external conjugate 20 cm., obliques 21 cm.

The temperature, pulse, respiration and urine were normal upon admission. Only one vaginal examination was made on the patient while in the hospital, under the usual aseptic conditions. It was evident that delivery was imperative, and the extraperitoneal method was chosen because of the many examinations the patient had had before admission.

The operation as carried out was a modification of the technic recently published by Dr. T. H. Cherry, in the *AMERICAN JOURNAL OF OBSTETRICS AND DISEASES OF WOMEN AND CHILDREN*, vol. lxxvi, No. 4, 1917.

A cubic centimeter of surgical pituitrin was administered by hypodermic just before incising the abdominal wall. As the chorion was incised, a foul smelling yellowish, purulent fluid gushed out, which was collected for bacteriological examination. The child was extracted by the breech, the cord clamped and cut, and placenta and membranes removed intact. The bleeding was moderate, but was checked by pouring hot saline into the uterus and then packing it. A small opening above the uterine incision, allowed a bit of omentum to slip through, but a plain catgut suture No. 2 closed this aperture. After the uterus had been sutured by interrupted catgut sutures, a Lembert suture of the same material, was used to cover over the uterine incision. The peritoneum was closed with a continuous catgut suture, the fascia by interrupted catgut sutures, and the abdominal incision by a subcuticular suture of No. 1 plain gut.

The child, a male, weighing  $7\frac{5}{8}$  pounds, was born in good condition.

*Subsequent Course.*—For two days following the operation the patient was distended and tympanitic, but was relieved by enemata, catharsis and the rectal tube. On the fourth day after the operation, the patient's temperature was  $101^{\circ}$  F. On the following day it was  $101.8^{\circ}$  F., and on the next day  $99^{\circ}$ . The wound was dressed and from the upper and lower angles pus exuded, but the infection was superficial. The leukocyte count was 9000. The patient then made an uneventful recovery, the temperature ranging between  $98.4^{\circ}$  and  $98.8^{\circ}$ . She was discharged with her baby twenty-eight days after her admission.

Final examination showed the wound healed perfectly. The scar is 3 inches long, half above and half below the umbilicus. The uterus is small and firm; the fundus is at the navel, apparently in suspension. The vagina is normal, the cervix high up, closed, and there is no discharge present. The fornices are shallow.

The bacteriological examination of the amniotic fluid showed abundant staphylococci. Blood cultures taken immediately after



operation showed the same organism and some contamination. Another blood culture taken two days later was negative. Beside staphylococci, a small Gram-negative bacillus was isolated from the amniotic fluid.

DR. E. G. LANGROCK reported another case of

#### EXTRAPERITONEAL CESAREAN SECTION FOR CONTRACTED PELVIS.

This patient was twenty-five years of age, a primipara admitted to the service of Dr. Brodhead. She presented a pelvis which in spite of normal external measurements had a contracted inlet. It resembled the male type and was markedly flattened on the right half. The pelvic measurements were as follows: Interspinous diameter 27 cm.; intercrystal 30.5 cm.; right oblique 22 cm.; left oblique 22 cm.; external conjugate 23 cm.; true conjugate 8.5 cm. The transverse outlet was ample.

The patient was in labor twenty-nine hours during which time she had strong, regular pains every five to eight minutes, despite which the head did not engage. The membranes ruptured spontaneously at the beginning of labor and after twenty-nine hours the cervix was long, thick and dilated one finger.

The patient was examined by Dr. Brodhead. Because of the conditions above noted an extraperitoneal Cesarean section was decided upon. The patient had had many vaginal examinations.

An incision was made in the midline, 6 inches long, one-third above and two-thirds below and through the umbilicus in order to excise a small umbilical hernia. The cut edge of the peritoneum was sutured to the anterior surface of the uterus by a continuous locked suture of No. 2 plain catgut, thereby shutting off the general peritoneal cavity. One c.c. of pituitrin was given hypodermically and the uterus opened in the midline. The baby and placenta were extracted in the usual manner. The bleeding was profuse but easily controlled by iodoform gauze packing. The uterus was sutured with No. 2 plain catgut, interrupted. The abdominal wall was closed in the usual manner. The edge of the peritoneum was sutured to the anterior surface of the uterus leaving an area of the anterior uterine wall exposed which measured about  $3\frac{1}{2}$  inches in width and  $4\frac{1}{2}$  or 5 inches in length. The uterine incision was covered with a continuous suture of No. 2 plain gut.

Except for a very superficial skin infection the patient made an uneventful recovery.

The final examination of the patient showed the uterus adherent to the anterior abdominal wall over a small area of its anterior surface, with the whole of the posterior wall of the uterus, the fundus and portion of the anterior wall left to enlarge in the patient's succeeding pregnancies.

#### DISCUSSION ON CASES OF DRS. BRODHEAD AND LANGROCK.

DR. GEO. W. KOSMAK.—I have been very much interested in these case reports because of the high site of the incision, but I think the

term extraperitoneal incision is a misnomer, for this, as in similar instances, was really a transperitoneal operation.

It seems to me the uterus would involute more satisfactorily if there were no adhesions to the anterior abdominal wall. I have followed the method of Hirst in which the incision is made entirely below the umbilicus. In several cases I have had a slight tear of the peritoneum, which was sutured. I believe that with this method it is very easy to infect the peritoneum. On the whole I feel that if I should get a similar case to that reported, I would consider the facts very thoroughly before doing any more operations of this kind.

At the Lying-In Hospital we have been opposed to the delivery of the uterus before emptying it but I think there are certain cases which have been examined frequently and handled a great deal, in which Cesarean section may be performed but in which it might be better to deliver the uterus before emptying it. In view of these drawbacks I think the scope of the so-called extraperitoneal operation should be more limited and that in cases of this type there should be more hysterectomies done with the Cesarean sections; there would then be no possibility of getting infection from leaving the uterus in position.

Dr. Schumann of Philadelphia has recently suggested delivery of the uterus through the abdominal incision and then closure of the latter under the eventrated uterus, after which the uterus is opened and the vaginal stump after the hysterectomy, sewed into the lower angle of the operative wound.

But to come back to the subject of the report, I have had one case of so-called extraperitoneal section in which the abdominal wall became infected and the woman was nearly lost from a general peritonitis. The infection seemed to have passed through the uterus and out into the abdominal cavity. While the final result was good in this case I do not think that on the possibility of a future pregnancy we should take a similar chance. There are cases of Cesarean section of this kind reported in which the final results are good but I think we could save more babies and women if we did not take the chances involved in this operation.

DR. BRODHEAD.—I do not agree with Dr. Kosmak. If we have a patient like any of these three, who has been examined many times and when there is a strong probability that infection may have taken place (and you may remember there was a staphylococcus infection in one of my cases), I think that if we can do the extraperitoneal operation without exposing the general peritoneal cavity to infection, it is a safer operation and better than delivering the uterus before it is emptied. I cannot see why one should take out the uterus in these cases, and I do not see how we can tell whether a uterus is infected sufficiently to require its removal. Furthermore, I see no reason why the woman should not again become pregnant and carry to term. The operation in my opinion will be performed more frequently than in the past.

DR. KOSMAK.—I forgot to mention that I had the opportunity of doing two extraperitoneal sections on one patient. This patient had

an infection of the wound after the first operation and a broad band of adhesions caused an anterior fixation of the uterus. The patient became pregnant again within two years and suffered a great deal of pain from the adherent uterus and from the fact that while the posterior wall expanded to accommodate the fetus, the anterior wall did not. I did not think it was right to have left this woman with the anterior wall of the uterus adherent to the anterior abdominal wall in the event of a later pregnancy, and at the second operation I sterilized her.

DR. HARRY ARANOW.—The question that comes to my mind is why do you make the high incision? If I understand correctly the reason for making a high incision in a classical Cesarean section is to avoid adhesions. In a transperitoneal Cesarean section where you deliberately attach the uterus to the parietal peritoneum there seems to me every reason against a high incision. It is quite possible that the reason why the doctors had hemorrhage in every one of these cases was because the uterus could not contract properly, being attached so high on the abdominal wall.

DR. BRODHEAD.—There is no reason why the incision should be made so high and when I perform the next extraperitoneal section I will make the incision from the pubes to the umbilicus.

DR. F. A. KASSEBOHM reported a case of

#### POSTPARTUM ECLAMPSIA.

The patient, twenty-four years of age, a para-iv, was admitted to the obstetric service on October 7, 1917. Her family history was negative and her personal history was also negative until four years ago when she had pain over the region of the gall-bladder, was jaundiced and had slight fever. The diagnosis made by the attending physician was appendicitis and cholecystitis. After being on a liquid diet, with ice bag over the tender area and some internal medication, she felt perfectly well. Her menstrual history was negative: she had had three normal deliveries and three living children.

Her present illness began on October 7th, at 6.00 A. M. when she was delivered of a normal vigorous female baby. Two hours after she had a general convulsion, lasting two minutes; during the next hour she had two more convulsions and an ambulance was called. On the way to the hospital the patient had another convulsion.

The patient was well nourished and well developed, but was in a stupor from which she could be aroused with great difficulty; the pupils were equal and reacted to light. The bulbar conjunctivæ were markedly jaundiced and the skin of the rest of the body also. The heart and lungs were negative; the pulse was 80 per minute; the blood pressure 122 systolic and 80 diastolic. Tenderness was present in the right upper quadrant from the costal border to 3 inches below the free border of the ribs. The uterus was at the level of the umbilicus, firm, not tender and there was no bleeding *per vaginam*. The edema of the lower extremities was marked par-



ticularly over the dorsum of the left foot. A catheterized specimen of urine showed microscopically many fine and coarse granular casts, many red and white blood cells, and it boiled solid. The urea was 3 grams to the ounce; bile was also present.

The patient was given colonic irrigations with 5 gallons of 5 per cent. sodium bicarbonate solution every four hours, alternating with a hot air bath every four hours. She was given 30 grains of chloral hydrate *per rectum* after each irrigation.

Forty-five minutes after admission she had a convulsion lasting two minutes and vomited about 3 ounces of greenish fluid. A second convulsion occurred four hours later and a third two hours after that. During the night she had thirty convulsions and in the morning was given veratrum viride, m. viii, by hypodermic every three hours until the pulse reached 60. The patient had five more convulsions after this treatment was instituted.

On October 10th, three days after admission, the patient became rational. She has had no more convulsions, but was jaundiced and quite tender over the region of the gall-bladder. During the following night she again became irrational, and so violent that restraint became necessary. In the morning her mentality became much clearer; she conversed rationally, took fluids by mouth, and voided freely.

Six days after admission she developed a severe pulmonary edema during the night, became dyspneic and respiration was shallow. The pulse was 120, temperature 100, and blood pressure 170-110. Coarse bubbling râles were heard all over the chest and the patient expectorated pink frothy sputum. A diffuse petechial rash, red in color, on a erythematous base and not disappearing on pressure was present over the upper extremities and over the chest anteriorly. She was then given morphine sulphate  $\frac{1}{4}$  grain, atropine  $\frac{1}{150}$  grain hypodermically and nitroglycerine  $\frac{1}{100}$  grain q. 5 m. for six doses; then q. 15 m. for six doses, then every hour. The chest was dry cupped anteriorly. After the first five doses of nitroglycerine the rash disappeared. During the night the patient was given three doses of morphine,  $\frac{1}{8}$  grain, with atropine  $\frac{1}{200}$ , hypodermically.

The following day the patient felt better, the chest signs cleared up to a great extent and medication was discontinued.

That night the patient developed another attack of pulmonary edema, more severe than that of the preceding night. The same medication was repeated and phlebotomy was done, 10 ounces of blood being removed. The pulmonary edema cleared up and the patient went on to an uneventful recovery.

A subsequent examination showed a slight hypertrophy and displacement of the heart to the left and downward and slight jaundice. The liver was palpable 3 cm. below the costal margin. The urine continued to show albumin and casts until October 14th when it cleared up and the laboratory reports became negative.

DR. ARANOW.—There is one point about which I wish to speak and that is how they knew that this was a case of eclampsia. Another point is that we give veratrum viride in cases of eclampsia for the



distinct purpose of lowering the blood pressure. Here they had a woman with a pulse of 80 and a blood pressure of 120, who had gone through an apparently normal labor and was giving symptoms of postpartum eclampsia. I cannot see how she could be improved by the administration of *veratrum viride*.

DR. KASSEBOHM.—The pulse was 180 when the *veratrum viride* was given and the next day it dropped to 150 and it continued low until the patient developed the pulmonary edema, when it went up to 170.

DR. H. C. INGRAHAM reported two cases of

#### CESAREAN SECTION FOR ECLAMPSIA.

CASE I.—This patient, thirty years of age, a primipara, having a normal menstrual history stated that she menstruated last on November 28, 1916. The calculated date of her confinement was August 3, 1917.

She was admitted to the hospital on June 29, 1917, having had four convulsions prior to admission.

Physical examination showed a large woman, weighing about 200 pounds, and markedly edematous and in a semicomatose condition. Her abdomen was large, corresponding to the size of an eight months' pregnancy; this was attributed to the thickness of the abdominal wall. Vaginal examination revealed a long firm cervix with no dilatation, a very long small vagina and what was apparently a vertex presentation. The blood pressure was 196 systolic. A catheterized specimen of urine boiled solid.

The patient had five severe convulsions within an hour and a half after admission, so immediate emptying of the uterus was deemed advisable, because of the serious condition of the patient, because the abdomen was enlarged to the size of an eight months' pregnancy, because of the possibility of a mistake in the date. The condition of the cervix favored the abdominal route.

The abdomen was opened by means of the high incision and two male children extracted, one weighing 3 pounds and 12 ounces and the other 4 pounds and 6 ounces. Both children were dead at the time of delivery. Three silk-worm-gut retention sutures were also used.

The patient was put on colonic irrigations, chloral 30 grains, and a hot pack, every six hours. She had no convulsions after the operation and was so improved by the fifth day that treatment was cut to two irrigations daily. Her temperature was normal twenty-four hours after delivery and remained so throughout.

On the seventh day the wound was dressed, and retention sutures removed because they were cutting through. The escape of serous fluid was noticed at the lower angle of the wound. On the eighth day the patient had a coughing spell, the dressings became wet and when changed the lower angle of the wound was found to be open. This was packed with gauze. On the tenth day the patient complained of shortness of breath, suddenly became cyanotic and died.

The necropsy showed partial separation of the abdominal wound

and poor union in the remainder. There were no signs of infection of the peritoneal cavity. There was a large amount of serous fluid throughout the peritoneal cavity. The uterus was small and well contracted.

CASE II.—This patient was thirty-nine years of age, a primipara. Her last menstruation occurred on October 26, 1916; the date of confinement was August 2, 1918. She had a history of an induced miscarriage ten years ago.

Physical examination showed a very large woman, weighing 185 pounds. When seen on July 3, 1917, her blood pressure was 160 systolic. She had a slight trace of albumin in the urine. She was put on a meat-free diet and forced fluids. On July 10th the blood pressure had risen to 102 and the urine showed a heavy trace of albumin. She was then sent to the hospital. Upon arrival she was very nervous and complained of headache. She was given colonic irrigations, chloral 30 grains per rectum, every six hours. On July 11th, I was notified that the patient had a convulsion lasting about six minutes. She had four more severe convulsions within the next two hours. A vaginal examination showed a long conical firm cervix with no dilatation and a vertex presentation.

Abdominal Cesarean section was deemed advisable. The high incision was used, half above and half below the uterus.

The abdominal wall was very thick and boggy. A large amount of free fluid was in the peritoneal cavity. The uterus was closed by two layers of No. 2 plain catgut, continuous suture, then a Lembert of No. 2 plain gut for the visceral peritoneum. The parietes and peritoneum were closed by continuous No. 2 plain gut, the fascia by No. 2 chromic interrupted, the skin by subcutical No. 1 plain, and four silkworm retention sutures through the fascia were used. The patient was kept on colonic irrigations and chloral with the addition of hot packs. At 9.00 A. M. the following morning the patient had a slight convulsion lasting about three minutes and another about 7.30 that evening which was the last. Her highest temperature following the operation was 100.6° on the second day and became normal on the third day. The blood pressure at this time was 158. The patient voided 14½ ounces of urine showing a marked trace of albumin. Six days following the operation she was voiding 38 ounces having a faint trace of albumin. The blood pressure was 142. The treatment was cut to two irrigations a day.

On the seventh day the temperature rose to 101°, but was normal at night. At this time there was apparently good union. On the ninth day the dressing was found to be wet. On examination the edges of the wound were found separated. The patient was taken to the operating room and anesthetized. The edges of the wound were found separated and a sterile dressing pressed through the incision to the omentum. The pad was removed and iodine applied to the skin area. No signs of the former suture material were present. The abdominal wall was still somewhat waterlogged, but the abdominal fluid had disappeared. The edges of the wound were freshened by rubbing with a hot abdominal pad. Then five silkworm sutures

were passed down through one side of the abdominal wall about  $1\frac{1}{2}$  inches from the incision edge through the fascia and peritoneum and out on the other side. These ends were passed through split rubber tubing one on either side making a lateral splint to the incision. The skin was closed by subcuticular No. 2. plain gut. The patient had a reaction, the temperature rising to  $101.4$ , then becoming normal on the following day, where it remained until the patient was discharged. Ten days after the second suturing of the wound the patient was allowed out of bed and went home on the 14th day in apparently good condition.

One month after discharge she had a fine abdominal scar about 5 inches long. The uterus was free and well involuted.

DR. STEIN.—To me a most interesting question is whether a Cesarean section in eclampsia is indicated. Ought we to make a distinction between the mild cases and the severe ones? In a mild case it might be that we could get along with the induction of labor with the Barnes bags, etc., but in a severe case of eclampsia the best method is to perform an immediate Cesarean section. Although I feel convinced that even a Cesarean section cannot save all cases.

Some little while ago I had occasion to see in consultation a very interesting case in a woman nineteen years of age, a primipara, who suddenly became unconscious and when I saw her she was in deep coma. A Cesarean section was decided upon and quickly done. Patient, however, remained unconscious and died on the fifth day in spite of every known treatment. I do not think that by a slower method (slow dilatation) we would have had much better results in that case. We must remove the placenta as soon as possible in these severe cases of eclampsia and there is no quicker way of doing that than a Cesarean section.

DR. BRODHEAD.—It seems to me that the indications for Cesarean section in some cases of eclampsia are very clear. In a primipara at term with a long cervix, the induction of labor, the bougie, the bags, the lacerated perineum and the postpartum hemorrhage subject the woman to greater risks than the Cesarean section.

Recently a patient came to the Harlem Hospital with the history of eclamptic seizures and we instituted active eliminative treatment. Three days later she began to have convulsions and she had ten or twelve in rapid succession, in spite of very thorough eliminative treatment. She was just seven and one-half months' pregnant and we delivered her by a vaginal Cesarean section. The vaginal section is suitable up to seven and one-half months, but at eight, eight and one-half or nine months it is better to use abdominal section. After delivery the convulsions stopped and the patient made a speedy recovery.

With reference to the unhealed Cesarean wound, I have just had a very interesting experience. A primipara, thirty-nine years of age, who had been married eighteen years, had high blood pressure, albumin and headache. She was at term and I told her that the best chance for her and her baby was to have a Cesarean section, to which she consented. The operation was completed on Saturday



evening at nine o'clock. Several times on Sunday and Monday there was more bleeding than usual, but the bleeding was not excessive and her pulse was good. Fifty-five hours after the operation she suddenly drenched her dressings with blood. On examining the wound the house surgeon found a small place about one-half an inch long in the middle of the wound from which there was some oozing. Pressure was made with gauze, but in twenty minutes she again soaked the dressings. I then had her prepared for operation and a blood test was made preparatory to transfusion. We found the entire abdominal wound open and scarcely a trace of catgut left. I then sewed up the wound carefully and as soon as I had finished a transfusion of 800 c.c. of blood was done. The patient made a good recovery, the wound healing perfectly.

DR. KOSMAK.—I think that both this report and that of Dr. Kassebohm should receive most careful attention. Cesarean section for eclampsia in the first case, if it had been treated by eliminative and sedative measures would not have been required, for I believe the woman would have been delivered spontaneously. There are certain primipara in whom at the seventh or eighth month I do not think it is fair to employ a Cesarean section. Dr. Kassebohm's case proves that the presence of the fetus was not the decisive factor in the toxemia. The delivery in that case was perfectly normal and there was no evidence of toxemia at the time of delivery, yet the patient had a postpartum eclampsia. In the second case there seems to me to have been no valid excuse whatever for an operative delivery in the presence of dead and premature fetuses. Such a course reflects on the operation and brings a valuable operative procedure into disrepute. I think we ought to be very careful before we declare that most instances of eclamptic convulsions furnish an indication for immediate Cesarean section. We do not know the chemistry and etiology of eclampsia sufficiently to resort to a rapid forcible delivery which endangers life and I think it would be wrong to send out such an opinion from this Section. We should be extremely cautious about doing an operation requiring deep anesthesia and offering chances of infection and other serious complications in a woman already so dangerously ill and whose resistance is poor, when there are no contraindications to a vaginal delivery even if this is delayed until Nature has been given an opportunity to complete the same.

DR. ARANOW.—Dr. Stein made the unqualified statement that every eclamptic is best treated by a Cesarean section. I cannot let this statement pass unchallenged, but most of the best men in this country and abroad treat eclampsia conservatively. You are all acquainted with the work of Dr. Zinke and Dr. Stroganoff. Dr. Cragin has presented recently the comparative statistics of ten years' work at Sloane, which show that the mortality in eclampsia of both mother and child has gone down about 50 per cent. in the last ten years because they are treated conservatively. I believe that in the great majority of cases a woman who has had one Cesarean section will have to have a Cesarean in all her subsequent



pregnancies. I, therefore, feel that with rare exceptions the woman with eclamptic toxemia should be treated by eliminative measures as Dr. Kosmak has described until her uterus can be emptied with safety. Dr. Stein states that eclampsia is undoubtedly caused by the placenta. Dr. Kassebohm's case could not be said to have been caused by the placenta as the symptoms appeared some time after the placenta had been removed.

DR. LANGROCK also presented a report of a case of

#### STRANGULATED OVARIAN CYST COMPLICATING PREGNANCY.

This patient was twenty-four years of age, a para-i. The date of her last menstruation was Feb. 28, 1917. She was first seen by the writer in March, 1917, for an attack of acute right iliac pain, with vomiting. She gave a history of having had several similar attacks. This had been diagnosed appendicitis. With rest in bed, ice bags and enema the patient was well in seven days. Vaginal examination at this time revealed only an early pregnancy and as the woman was extremely desirous of having the baby and the appendicitis was not particularly urgent she was advised not to have the appendix removed at this time, but to wait until after her delivery unless she should have another attack.

From this time her pregnancy was uneventful until Oct. 7, 1917, when she had a sudden severe pain in the right lower quadrant. The pain was spasmodic and radiated to her back and down the right thigh. There was slight tenderness in the right lower quadrant. There was no rigidity and no mass was felt either abdominally or vaginally. The patient's temperature and pulse were normal. The uterus was the size of a seven months' pregnancy. The appendicitis was diagnosed but there was no indication for an immediate operation.

During October 8, 9, 10, the pain in the right lower quadrant persisted, at times becoming extremely severe, while at other times there was no pain. During this time there was no elevation of temperature, increase in pulse rate nor was there any abdominal rigidity. On the evening of October 10 the patient began to vomit, the pain in the right lower quadrant became more severe. It was decided, however, to observe the patient a few hours longer. On October 11, the pain in the right iliac fossa was most marked and was induced by pressure in the right iliac fossa. The temperature rose to 101, the pulse to 104. The pain became more severe and there was slight rigidity. The position of the fetus was R. L. O. The blood count showed 19,000 white blood cells, 89 per cent. polymorphonuclears, 11 per cent. mononuclears. Appendicitis was diagnosed and operation decided upon.

The patient was removed to the Harlem Hospital where she was operated on by Dr. L. Friedman. A cystic mass was found the size of a large grape fruit. The mass was accidentally ruptured and a large quantity of bloody fluid escaped. The cyst was tightly pressed against the abdominal wall by the pregnant uterus and this caused the interference with its circulation. No twist was found in

the pedicle, which extended to the right ovary. The inner surface of the cyst was hemorrhagic throughout and showed large areas of extravasation and ecchymosis. The appendix was found acutely inflamed and was removed.

The patient remained in the hospital seventeen days during which time she showed no signs of a premature labor. The pathological conditions did not interfere with her pregnancy in any way. The patient was delivered of an 8½-pound baby on December 25, 1917, by a low forceps operation and had a perfectly normal puerperium.

#### DISCUSSION.

DR. BRODHEAD said he had just had a patient come into his service at the Harlem Hospital who about ten days ago began to have severe pain in the right lower quadrant. The pain was constant and radiated down the right thigh, becoming more severe daily until three days before her admission to the hospital, when she began to vomit.

On admission there was marked tenderness over the whole right abdomen, rigidity of the abdominal muscles, with marked and rebound tenderness. A cystic mass was easily felt to the right of a 7½ months' uterus. The urine contained bile. (There was pressure on the bile ducts from the mass which extended to the right hypochondriac region.) The white blood cells numbered 17,000; polymorphonuclears 88 per cent., and mononuclears 12. On admission the temperature was 98.8° F; pulse 104, respirations 32.

The patient was referred to Dr. Haynes' service and was operated on by Dr. Falk. The operation revealed a large cystic mass extending to the right hypochondrium and having a pedicle going to the pelvis. The pedicle showed three distinct twists. The pedicle was transfixed, ligated and cut.

The pathological report showed a hemorrhagic, necrotic cyst wall.

Occasionally in pregnancy we meet with a fibroid with a twisted pedicle. I recall a patient who was referred to me by Dr. Grausman, who was only three months' pregnant and whose uterus was enlarged to the size of a seven months' pregnancy. She developed a temperature of 102° and marked abdominal tenderness; in this case a fibroid with a twisted pedicle was found and hysterectomy was performed.

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#### SECTION ON GYNECOLOGY AND OBSTETRICS.

*Stated Meeting, Held February 26, 1918.*

DR. WILBUR WARD, *in the Chair.*

DR. ALFRED M. HELLMAN reported a case of

#### HYDATID MOLE.

The patient was forty-four years of age, had four living children, the youngest ten years old, and a miscarriage with curettage seven years ago.

She stated that four months ago her menstrual period was a little delayed. She then started spotting and thought she was pregnant. At this time she was referred to me. After examining her I thought she was pregnant and that there was probably a fibroid back of the pregnancy. I advised that the pregnancy be interrupted and this was decided upon. In removing the secundines a bunch of hydatids were caught in the forceps. On account of the patient's age and the possibility of the hydatid becoming malignant a complete hysterectomy was performed. The uterus was found to be a little larger than it should have been.

#### DISCUSSION.

DR. M. A. SCHLENKER said: "We have had three cases of hydatiform mole in our service at the Gouverneur Hospital, occurring within a comparatively short period of time.

"The first was a woman forty-two years of age who gave a history of an amenorrhea of six months. The mole was expelled in its entirety. This patient was subjected to a vaginal hysterectomy and her recovery was uneventful. The second woman was eighteen years of age with a history of having missed her menstrual period eight weeks. She expelled her mole spontaneously and later was curetted. There was but little evidence of the mole remaining in the uterus. The third was a woman forty-five years of age with a history of six weeks' amenorrhea. She was bleeding on entering the hospital, was somewhat cachectic and complained of being very weak, which caused us to think of the possibility of a malignant change. She likewise expelled her mole spontaneously and made an uneventful recovery.

"Seeing these three cases within so short a space of time impressed me with the fact that hydatid moles do occur much more frequently than we have been accustomed to believe. The procedure of hysterectomy, in my estimation, is a rather radical one for this condition. If the uterus is thoroughly evacuated, it will undergo involution and the possibility is that no further trouble will follow; but we must not overlook the fact that some of these hydatids do undergo malignant degeneration."

DR. ARNOLD STURMDORF said; "I desire to ask Dr. Hellman whether he did a vaginal or an abdominal hysterectomy and what pathological condition of the ovaries was demonstrated."

"Clinically the cases of hydatid mole may be divided into two classes, namely, those in which the mole is spontaneously expelled *in toto* and those in which it is adherent from invasion of the uterine musculature.

"There is a certain established relationship between cystic ovaries, hydatid mole and chorioepithelioma, the exact nature of this relationship and its transitional stages are not clear, but it occurs with sufficient regularity to justify a hysterectomy in every case where spontaneous expulsion of the mole has not occurred."

DR. ARTHUR STEIN said: "In a case of hydatid mole I do not



think we should wait before resorting to a radical procedure. The right procedure in many cases is to do a total hysterectomy. Anyone who has watched this type of cases and has seen how rapidly they become malignant will agree that a total hysterectomy is a safe procedure. It is remarkable how a very little polyp of a hydatid mole left in the uterus will spread and degenerate into a chorioepithelioma and reach a stage where it is inoperable. Therefore, it is advisable to do a total hysterectomy in time."

DR. S. WIENER said: "I would like to say a word as to the other side of the picture. I have seen an instance of a large hydatid mole in a woman thirty-four years of age, apparently firmly adherent, in which the uterus was thoroughly cleaned out and the woman has had no further trouble. I do not think we should allow the teaching to go out from this Section that every case of hydatid mole should be subjected to a hysterectomy. I have personal knowledge of several cases, two in particular, in young women in whom the uterus was cleaned out and the women have remained perfectly well and afterward have given birth to normal children. While I do not believe that we should perform a hysterectomy in every case of hydatid mole, I do believe that every such case should be kept under close observation for months. With this precaution a fair proportion of hydatid moles can be treated by simple removal of the mole; and furthermore, as far as the technic is concerned, one can perform a vaginal hysterotomy if it is advisable to investigate the entire endometrial surface to be sure that the mole has been thoroughly removed, or that there is not a beginning chorioepithelioma."

DR. HELLMAN, in closing, said: "In reply to Dr. Sturmdorf's question, I would say that I did an abdominal hysterectomy. I sewed the cervix closely together and painted the entire vagina with iodine. I then proceeded to do the abdominal hysterectomy because I think I can do better and a quicker operation in that way.

"This patient had lost weight, some fifteen or twenty pounds, whether because of the hydatid mole or because she was worried about it, I cannot say, but it seemed that taking this fact and her age into consideration a hysterectomy was the best thing to do. I have here the ovaries and you can see that there are a number of cysts on them and on the tubes.

DR. ARTHUR STEIN reported a case of

#### HYDROSALPINX WITH TWISTED PEDICLE SIMULATING ECTOPIC PREGNANCY.

The woman, thirty-nine years of age, had had one child but she has never been pregnant since that time. She had been menstruating every two weeks. She had a period September 12, then in the middle of October and in the beginning of November. I saw the woman on November 23, after she had been suddenly seized with excruciating pain in the lower abdomen with hemorrhage from the vagina, and was in a state of collapse. Her temperature was normal, pulse 84. I was able to make out that she had a retroflexed uterus



and to the left, occupying the site of the adnexa, there was an indefinite mass about the size of a small cucumber. The diagnosis of ectopic pregnancy was made and the patient transferred to the hospital.

On opening the abdomen, on the left side we found the mass which is shown in the specimen. It is dark red in color and twisted about its pedicle four times. The right tube was also diseased being transformed into a hydrosalpinx. A double salpingectomy was done. When we came to examine the specimen we found that it was a hydrosalpinx which had become twisted and hemorrhagic.

CASE II.—I wish to show another specimen which fits in very well here. The history of a woman thirty-five years of age who was never pregnant. She was seized with acute pain in the lower left abdomen. On examination a large mass was found and a diagnosis was made of tumor on the left side. It was thought to be an ectopic pregnancy. On opening the abdomen we found a tumor with a *twisted pedicle* and on opening it it was found to be an old pyosalpinx which had produced symptoms simulating an ectopic pregnancy.

I am presenting these specimens because I think they are interesting and not very common. A fact that was also of interest was that nowhere were there any adhesions whatsoever.

DR. STEIN also presented a specimen and reported a case of

#### GANGRENE OF THE UTERUS DUE TO TWISTED PEDICLE OF SMALL SUBMUCOUS MYOMA.

This specimen was taken from a woman sixty-one years of age. She was examined by the writer three years ago and at that time was perfectly well. The uterus was sounded and found to be normal for a woman of this patient's age, small and shrunken. When she was again seen she gave the following history: For five weeks she had had a foul purulent discharge. On examination it was found that the uterus was somewhat enlarged, about twice the size of the specimen. A curettage was suggested and done and the scrapings examined. They showed deep-seated multiple abscesses in the uterine wall. At the time of the curettage very foul pus was evacuated. The course of the case was not smooth after the curettage. There was a rise in temperature to  $103^{\circ}$ ,  $104^{\circ}$  and  $105^{\circ}$ , instead of a decrease. In the discharge, as one would have expected, there was an excessive increase, and then odor absolutely intolerable. Then a total extirpation of the uterus was done.

It was interesting to see the uterus *in situ*; it was large, deep, black and soft. The uterus was opened after doing the total hysterectomy and the whole uterine wall up to the peritoneum was absolutely black. The diagnosis was clearly gangrene of the whole uterus. It had started from a little myoma and the entire uterus had become infected. The pelvic veins were free. The patient made an absolutely smooth recovery.

## DISCUSSION.

DR. THOMPSON T. SWEENEY said: "The drop in the red blood-cell count would account for the leucocytosis which we nearly always find in ectopic pregnancy. In the discussion of the case Dr. Stein mentioned the fact that there were rather marked pus tubes. He also stated that there were no adhesions. This is interesting as it shows that the infection was being overcome and that there was no exudate. This serves as an example of the way in which Nature will absorb an exudate, for in this case the tubes were free. The reason I mention this is to call attention to the fact that in mild forms of gonorrheal salpingitis it is always wise to give the tubes a chance to recover through natural processes. There are many women who have had a gonorrheal salpingitis who have overcome the infection and have borne children afterward. It is very interesting in some of these cases to see how the exudate is absorbed and the ovaries and tubes protected from permanent damage."

DR. GRAD said: "I think that cases of infected tubes are of two distinct classes; in one class adhesions form and in the other they do not. It is in the cases in which adhesions do not form that the twist occurs. The type of case that Dr. Stein has presented is that in which the pus tubes do not cause an exudate and there are no adhesions formed."

A MEMBER.—Attention has been called to the fact that one may mistake a hydrosalpinx for an ectopic pregnancy. The reason is because the symptomatology is similar and this is because the ovarian function is disturbed in hydrosalpinx. In differentiating the two conditions there is one point to be considered and that is the blood examination. If we can get the blood count we are in a little better position to differentiate between these two conditions. I have had the same thing happen to me as has just been described. I have had a patient who apparently had an ectopic pregnancy. On making the blood count it was found that she had a leukocytosis, a normal hemoglobin and a normal red blood-cell count and as a consequence of this finding the diagnosis was changed to infection. At operation it was found that the woman had a salpingitis. It is rather surprising how the red blood-cell will change even with a small amount of abdominal hemorrhage.

DR. STEIN, in closing, said: "I also think there never were any adhesions in this case. The appearance of the specimen would lead one to think there were never any adhesions. The most interesting feature of this case is that, while there was a pus tube on one side, the tube on the opposite side was so hard that we thought at first that we were dealing with a myoma."

"I have shown these two specimens only for one reason and that is to show that it is not always easy even with the specimen before our eyes to say whether we have a hematohydrosalpinx or an ectopic pregnancy. In both of these cases we thought we were dealing with an ectopic and found later that we were mistaken."

DR. WALT P. CONWAY, of Atlantic City (by invitation) reported

A CASE OF CESAREAN SECTION IN TWIN PREGNANCY WITH UNUSUAL COMPLICATIONS.

Mrs. A. K., primipara, age forty-one and one-half years. The patient was a native of Scotland, where she enjoyed outdoor life and the best of health, with only a few of the usual diseases of childhood. She came to this country at the age of thirty-eight years and was married at the age of forty. There was no history of abortions or miscarriages. During the last two months of pregnancy she suffered considerable pain all over the abdomen and there was marked constipation and loss of appetite. For one week prior to her admission to the hospital she was ill with peritonitis. She was admitted to the obstetrical ward of the Atlantic City Hospital on May 30, 1917, temp. 102°; pulse 100; resp. 32; diagnosis, pregnancy at term, complicated by peritonitis.

Physical examination showed a well-developed woman of middle age, with no evidence of cardiac or pulmonary disease. There was a slight albuminuria and the blood showed a two plus Wassermann. Her abdomen was considerably enlarged and flattened, suggestive of a twin pregnancy. Her pelvic measurements were: anteroposterior diameter, 9 cm.; transverse diameter, 10 cm.; oblique diameter, 11 cm.; transverse, between tuberosities of ischia, 9 cm. R. O. P. presentation.

The pains began twenty-four hours before admission and gradually increased in severity with but little progress for forty-eight hours. At this time the patient was nearly exhausted and an attempt was made to dilate and deliver with forceps under general anesthesia (gas, oxygen and ether). The os was so rigid that no more than three fingers' dilatation could be secured and delivery at this time was abandoned. HMC tablets had been given at regular intervals for twenty-four hours. These made the patient more comfortable, but still the pains made little or no progress with the first stage. After three days of irregular uterine contractions with but little progress, the patient was transferred to the gynecological ward for operation, craniotomy or Cesarean section.

The condition of the patient was not at all satisfactory, but I decided, in the interest of the child to attempt Cesarean section, although the fetal heart sounds were very faint and the diagnosis of a possible dead fetus seemed most likely. She was prepared for immediate operation. On opening the abdomen I found an enormous uterus, very adherent to the parietal peritoneum, with the mesentery adherent to the fundus. After freeing the uterus from its inflammatory adhesions, I made an incision through the fundus and delivered, with some difficulty (on account of a caput succedaneum from the constriction ring at the cervix) a well-developed male child, which weighed 6¼ pounds. The placenta was adherent, thrombosed in many places, and apparently diseased. Another baby, a female, which weighed 5¼ pounds, was easily delivered



a few seconds later. This placenta was not abnormally adherent or diseased.

The first baby delivered did not cry and the cyanosis was so marked that it was considered hopeless. The second child gave a hearty cry promptly, although its general condition was weak and quite emaciated. After several hours' faithful and constant attention to the first baby it reacted satisfactorily and both babies continued to thrive after the third day.

The appendix was postcecal, drumstick in shape and imbedded in an inflammatory mass. There was no gangrene and no free pus, but, in my judgment, the peritonitis originated from this appendix. The ovaries were small and apparently not diseased. On account of the diseased condition of the uterus it was my desire to do a hysterectomy, but the patient was in such a dangerous condition at this time that I was obliged to be content with double ligatures on each tube, in hopes of preventing future pregnancies. The abdomen was closed in tier sutures as quickly as possible. Sixteen ounces of normal salt solution were given intravenously in each arm during the operation. No anesthetic was given while the abdominal wound was being closed, but oxygen was administered freely, and the patient left the operating room in extreme shock, with marked cyanosis, pallor and a radial pulse, scarcely perceptible.

She had rather a serious convalescence. The operative interference seemed to aggravate the peritonitis and the next day after the operation her temperature was  $103.6^{\circ}$  and continued high, from  $101^{\circ}$  to  $104^{\circ}$ , for ten days, with frequent chills, excessive sweats and a heart action that was most unfavorable. A bowel movement could not be secured for four days, but finally, peristalsis was re-established, largely, I think, through the effect of small doses of pituitrin administered regularly every two hours. Pus formed and gravitated to the culdesac, where it was easily removed by vaginal puncture and drainage. Following this the patient improved rapidly. The wound healed perfectly except for one small stitch abscess, and the patient left the hospital in good condition, and with two fairly healthy looking babies, on June 26th.

One of the babies was dangerously ill with gastroenteritis for several weeks during August and September. The husband and father reported during the Christmas holidays that all were well and thriving.

#### DISCUSSION.

DR. WALTER B. MOUNT.—In a Cesarean section done after a woman has been in labor a long while (two or two and a half days) where the cervix is undilated and the head is wedged in the pelvis, a complication is possible to which I would call attention. I had a case of this kind in which it was difficult to deliver the child and a Cesarean section was resorted to. Pituitrin had been given as the operation was begun and before the head was freed the uterus had contracted so that it became necessary to enlarge the wound. It



is well to keep the possibility of such an occurrence in mind in connection with the administration of pituitrin and Cesarean section.

DR. HERMANN GRAD said: "Dr. Conway is to be congratulated on the outcome of this most desperate case. If he had done a craniotomy the abdominal condition of acute appendicitis would not have been discovered and relieved and the lives of the infants would not have been saved."

DR. WALTER B. MOUNT reported the following cases:

A. SPONTANEOUS EVOLUTION OF A TRANSVERSE PRESENTATION.

Mrs. L. F., colored, aged forty-two, a para-x. Her mother had had seventeen children. Had been married twenty-three years; no miscarriages; nine children, the first six delivered by a midwife. Usually got out of bed on the fourth day. The last child had been born



FIG. 1.

five years ago. During this pregnancy she was not as comfortable as in other pregnancies, complained of weakness, edema of the feet for two months, and a little vomiting. Admitted to the Hospital on March 22, 1914, in the second stage of labor. For two days there had been a few slight pains, and at noon on the day of admission they became harder, and harder yet in the afternoon. At 7.30 P. M. her doctor thought he felt the scrotum and nates. Admitted at 9.00 P. M., bleeding considerably. The interne found the cervix

fully dilated and thought the breech was presenting. Very hard second stage pains commenced about the time of admission. The bleeding became less. The placenta was not felt. The cord was prolapsed and was not pulsating. It was replaced and remained above the presenting part. The interne remarked that the presenting part felt like a "bag containing bones," thought it might be a head. No meconium seen. The fetal heart could not be made out at any time. As the presenting part appeared it looked like a head without hair, was round and smooth. The pains were very hard, and suddenly at 9.37 the child and placenta were delivered at once as a transverse delivery, the so-called "spontaneous evolution." The child was stillborn, slightly macerated, and weighed 3 pounds 15 ounces. The cord was short,  $12\frac{1}{2}$  inches.

The pelvic measurements were: Interspinous, 25 cm.; intercrestal, 28 cm.; left oblique, 22 cm.; right oblique, 21 cm.; external conjugate, 20 cm.

The photograph shows the child as it was delivered, the left scapular region presenting and appearing first.

#### B. FORCEPS DELIVERY AFTER A CESAREAN SECTION.

Mrs. A. G. B., thirty-one years old. She is a large woman. The pelvic measurements are very good: Interspinous, 25 cm.; intercrestal, 30 cm.; left oblique, 22 cm.; right oblique, 22 cm.; external conjugate, 21 cm.; internal conjugate, 11 cm.; promontory of sacrum not felt, pubic angle wide.

On August 23, 1915, fell in labor at term. At 2.00 P. M. the cervix was two fingers dilated, the membranes ruptured, and the presentation seemed to be vertex. The pains continued. At 10.00 P. M. I saw the patient in consultation. The cervix was over three fingers dilated; the brow was presenting. The fundus was high and very prominent, contracting hard and frequently. The back seemed to be to the right, the fetal heart was heard in the right lower quadrant near the median line, and was faint. The forehead was felt to the right and in front, and beyond that the eyes and nose. A right frontoanterior position. The vagina was large and the pelvis roomy. It seemed best to do a Cesarean section, which was performed at 12.30. The child weighed 10 pounds, 14 ounces. Patient discharged on the 13th day.

Two years later she became pregnant a second time. She had gained weight, for she is a large eater. In the last months of this pregnancy there were casts once, hypertension a few times, and dyspnea and tachycardia. She was delivered on January 27, 1918, at term. After six hours the cervix was two and a half fingers dilated, and the position an L. O. A. After six hours more the cervix was fully dilated and pains had become harder. Membranes ruptured artificially. Uterine inertia occurred, medium forceps were applied, and the child rather easily delivered with the head not molded, and weighing 11 pounds  $12\frac{1}{2}$  ounces. There was a slight postpartum hemorrhage. A lacerated and bleeding cervix

was repaired. Lacerations of the labia were repaired with continuous chromic. Three weeks after birth the babe weighed 12 pounds and was gaining 2 to 2½ ounces every day.

#### DISCUSSION.

DR. SAMUEL J. SCADRON said: "I was very much interested in the case of spontaneous evolution. Spontaneous delivery in an oblique presentation is not a frequent occurrence, especially when the shoulder presents. About a year ago a patient walked into the hospital and applied for admission. She was a multipara, this being her fifth pregnancy. On examination, the arm of the fetus was prolapsed, the cervix was soft and dilatable admitting about three fingers. She was apparently not in active labor. The patient was ordered to bed and about two hours subsequently when I arrived she was still not in very active labor. While I was washing preparatory to examining her the patient was seized with a strong uterine contraction, and when she was examined the buttocks of the child presented with the arm remaining prolapsed through the vagina. With the next uterine contraction she delivered herself spontaneously of a stillbirth which was full term. It seems to me that in my case the shoulder of the child was driven down into the pelvis and became fixed under the symphysis, while the breech, trunk, and limbs were forced past this part, and finally the other shoulder and head escaped. The case reported seems to me was a birth with the body doubled-up, for in a case of spontaneous evolution the arm is invariably prolapsed beforehand."

DR. MOUNT, in closing, said: "I have looked up the literature on the subject of transverse presentations and I did not find it very clear in reference to terminology. I do not know whether this case should be called one of spontaneous evolution but that is what DeLee calls it and that is why I took that terminology.

"Criticism might be directed against doing a Cesarean section in a brow presentation. There were two factors which influenced us to perform the Cesarean section; the one was that we had seen two cases of brow presentation delivered by forceps with disastrous results to the baby in one instance and with injury to the mother and in the other instance the baby's head was very badly treated. The other reason was that the uterus was contracting pretty hard and there was danger of hemorrhage or perhaps of rupture of the uterus."

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#### REVIEWS.

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DISEASES OF WOMEN. By HARRY STURGEON CROSSEN, M. D., F. A. C. S., Associate in Gynecology, Washington University Medical School, and Associate Gynecologist to the Barnes Hospital; Fellow of the American Gynecological Society and of the

American Association of Obstetricians and Gynecologists. Fourth edition, revised and enlarged. With 800 illustrations. C. V. Mosby Company, St. Louis, 1917.

As a thorough revision of this work for this fourth edition was begun, its author was called to active duty as a member of the Medical Officers' Reserve Corps. The completion of the work was entrusted to Dr. Ehrenfest, an associate, who must be commended for having stepped into the breach to relieve a colleague. The two principal additions in this revised work are an extended chapter on the ductless-gland system by Dr. Ehrenfest and a large number of new drawings illustrating gynecologic pathology. The numerous photos and specimens scattered throughout the work are very satisfactory and have given Dr. Crossen's book a character that has assured well-deserved attention.

In the new chapter on the endocrine glands, Dr. Ehrenfest presents a résumé of the present knowledge on the subject. One gathers the impression that the practical application of this knowledge to the treatment of gynecological disorders is still in an incomplete state. The writer believes that a gynecologic condition can and should be regarded as the result of anomalous internal secretion only after the most careful examination and study of the case has failed to reveal any other possible cause. He believes that there are many tissue lesions among the so-called functional disturbances which are not sufficiently recognized and furthermore that the rather widespread attempt to explain practically all gynecologic diseases, with the sole exception of those obviously due to infection or traumatism, on the basis of a hypofunction, hyperfunction or dysfunction of one or more of the endocrine glands, is unjustifiable and unfortunate.

In summarizing the therapeutics of the so-called internal secretory glands Dr. Ehrenfest concludes that the information at present available concerning the rôle played by functional disturbances of the ovary and other glands demands definite changes in our conception of the rationale of some of the methods of treatment customarily used in gynecologic practice. The therapeutic value of certain procedures therefore becomes doubtful. Thus the local application of caustics or curettage to the endometrium is of no avail if this tissue is not responsible for the virginal menorrhagia or the climacteric metrorrhagia. Likewise the acknowledged effectiveness of certain therapeutic methods must be explained in a different manner. For instance, the correction of a uterine malposition relieves an associated metrorrhagia, not by establishing a better circulatory condition in the uterus but by eliminating a pathologic irritation of the ovaries which results from the displaced uterus. Furthermore, hot douches, stem pessaries, etc., do not directly stimulate to further growth a small uterus but probably only excite the ovary to increased activity in supplying sufficient growth hormones to the uterus. It could be reasonably expected that a deficiency in ovarian hormones would be counteracted by the administration of ovarian extracts, or that ovarian function could be stimulated and retarded respectively by the hormones extracted from certain other glands of the endocrine



system. The author claims that it is necessary to consider all therapeutic procedures available for combating ovarian hypofunction or hyperfunction under three headings. First, local treatment of pelvic pathology, second, constitutional treatment, and third, organotherapy. In employing the latter it is essential that the substance administered must be chemically and biologically identical with the one that is missing and about to be replaced. Dr. Ehrenfest claims that adrenalin is the only substance of this kind that has thus far been isolated in pure form. This, however, represents but one of the hormones supplied by the adrenal cortex and in a similar way pituitrin contains a promptly acting hormone with purely local effect. Moreover it is only of certain products prepared from the thyroid that we know definitely that they can counteract all of the symptoms due to deficient activity of this organ. Regarding the various ovarian preparations now so largely employed, attention must be called to the fact that the question is still unsolved as to whether the potent substances are supplied by the interstitial glands or the follicle apparatus, or particularly by the corpus luteum. The problem is made still more complex because many of the commercial preparations are supposed to supply the isolated active principles in the form of an extract. A successful extraction of the active substances is still an unsolved problem and great differences in the effectiveness of these substances is to be expected. Moreover, none of these preparations can be standardized but Dr. Ehrenfest cautions against the pessimistic attitude regarding these therapeutic resources and undoubtedly we may hope for a better interpretation and a more perfect knowledge of their value in the future.

**SURGICAL THERAPEUTICS AND OPERATIVE TECHNIQUE.** By E. DOYEN. English edition prepared by the author in collaboration with H. Spencer-Browne, M. B. Cantab., etc. Volume 1. William Wood and Company, New York, 1917. Price \$25.00 per set.

It is the intention of the English translator of this important French work to issue the same in three volumes instead of the more voluminous five in the original. Doyen's great work is so well known among French-speaking people that its translation into English ought to meet with success. The English edition, however, is not merely a translation of the existing French edition but is taken from the material from which the new French editions will be compiled and includes therefore the latest developments in war surgery.

Particular attention in the introductory portion is accorded to the surgery of blood-vessels and nerves and the transfusion of blood. The treatment of accessible cancers by electrocoagulation has been largely rewritten because of the signal advance in this field and the remarkable original studies on cancer by Doyen will insure the earnest consideration of surgeons in general to this portion of the work. Without any question there is a great future in store for this method.

The present volume describes general surgical technique, the greater

part of which has been developed by the author and also refers in detail to the many instruments that have resulted from the exhibition of his inventive genius. The second part of the book is taken up with the surgery of the head and includes a detailed description of the numerous operations in this field. The work is exceedingly well illustrated and the translation is most satisfactorily carried out. The book is worthy of the sincere and careful attention of the American reader.

**DISEASES OF THE SKIN.** By RICHARD L. SUTTON, M. D., Professor of Diseases of the Skin, University of Kansas School of Medicine; Former Chairman of the Dermatological Section of the American Medical Association; Dermatologist to the Christian Church Hospital, etc. With 833 illustrations and 8 colored plates. C. V. Mosby Company, St. Louis, 1917.

The second edition of this very excellent work contains 100 pages of new text and 140 new illustrations. A number of new topics have been considered, including gangrenous balanitis, atrophy of the mucous membranes of the tongue and mouth, and atrophy of the fatty layer of the skin. The work will prove of value and interest to the general practitioner but a suggestion might be put forward to the author for any possible later editions which would render the work of greater value to gynecologists and obstetricians, namely, to include in the index or other portion of the work a distinct reference to the skin lesions commonly associated with pregnancy and the diseases of women. Skin lesions of considerable variety occur during pregnancy which are directly attributable to this condition and occasionally are very puzzling to the practitioner in attendance. The book constitutes one of the most extensive American treatises on the subject of dermatology.

**AN INDEX OF DIFFERENTIAL DIAGNOSIS OF MAIN SYMPTOMS BY VARIOUS WRITERS.** Edited by Herbert French, M. A., M. D. Second Edition. With 37 colored plates and over 300 illustrations. William Wood and Company, New York, 1917. Price \$10.00 net.

This important work presents the combined efforts of twenty-three well-known English physicians and surgeons. It is a treatise on the application of differential diagnosis to all the main signs and symptoms of disease and covers the whole ground of medical practice including the minor specialties. The book is divided into two portions, the larger part consisting of an alphabetically arranged series of symptoms which are followed by a sufficiently extended description to assist in its identification and correlation with others of a similar character. In order to distinguish their relative importance three different sizes of type are employed. The second part of the book consists of an index in which are gathered under the various diseases the symptoms previously dealt with. The guiding principle of the work is based on the fact that a particular symptom attracts special notice in a given case and that the diagnosis has to be

established by differentiating the various diseases to which this symptom may be due. Treatment, pathology and prognosis are not dealt with except in so far as they bear on the differential diagnosis.

The book is exceedingly well printed and although it contains an enormous amount of information the size of the type permits the compression of the same in a work of reasonable size. A large number of exceedingly well-drawn illustrations and color plates are employed. The book should be of particular value to the general practitioner and also the specialist who may be puzzled by the occurrence of symptoms in cases outside of his particular field.

**OBSTETRICS.** A Text-book for the Use of Students and Practitioners.

By J. WHITRIDGE WILLIAMS, M. D., Professor of Obstetrics, Johns Hopkins University; Obstetrician-in-chief to the Johns Hopkins Hospital, Baltimore, Md. Fourth enlarged and revised edition. With 17 plates and 685 illustrations. D. Appleton and Company, New York and London, 1917.

The fourth edition of this important work presents a record of the progress in obstetrics which has been made since the appearance of the last edition five years ago. The revision is thorough and several chapters have undergone changes and a number of new illustrations in the characteristic manner of Max Broedel are included. These show in greater detail the operative technic of Cesarean section, the anatomical changes occurring during the third stage of labor and the premature separation of the normally situated placenta. The principal changes in the text are concerned with the following subjects: anatomical changes during menstruation; placentation; metabolism of pregnancy and the puerperium; Abderhalden's pregnancy reaction; changes in the endocrine glands; obstetrical anesthesia, including "twilight sleep" and nitrous oxide-oxygen anesthesia; physiology and anatomy of the third stage of labor; Cesarean section; the relation of syphilis to the generative process; etiology and treatment of abortion and premature labor; the use of pituitrin; the mechanism of spontaneous evolution in transverse presentation; and premature separation of the normally implanted placenta.

A point of considerable interest in the new edition is the discussion on the value of chemical methods of determining the prognosis and treatment of the toxemia of pregnancy. Dr. Williams is still of the opinion that albuminuria, vomiting of pregnancy, acute yellow atrophy of the liver and eclampsia should not be grouped under the common heading of toxemia of pregnancy and that metabolic study of the urine and blood, as well as the histological examination of tissues obtained at autopsy will disclose in time that essential and characteristic differences exist between these various conditions. Dr. Williams believes that the probability of the eventual discovery of their ultimate causes will be greatly increased by considering them separately. He admits, however, that we are just beginning to



realize our profound ignorance of the subject. He also points out that totally different pathological conditions may be accompanied by identical clinical manifestations so that a proper classification cannot be based upon the occurrence of such symptoms as albuminuria, fever, coma, or convulsions but must depend upon our ability to isolate certain specific poisonous principles, or to demonstrate distinctive pathological lesions. Unfortunately the former is as yet out of the question but the latter has already been accomplished along certain lines. Dr. Williams therefore discusses this important subject under a variety of headings. The subject of eclampsia is considered in a very complete manner, more completely than by any other text-book. The author is unable to answer any question as to its etiology, frankly admitting that its cause is still undiscovered. Though clinically accepted as dependent upon a profound toxemia, he states that we have no grounds for accepting this origin in either the maternal or fetal organism, or both. Dr. Williams expresses himself in a very iconoclastic manner regarding the chemical methods which have been employed in determining the prognosis and treatment of the toxemias of pregnancy. The voluminous literature which has arisen abounds in so many contradictions that it cannot lead to any acceptable conclusions. After summarizing the various factors which have been investigated as the basis of the disturbance he concludes that none of them are sufficiently proved to warrant any reliance on their employment as indications for treatment.

The favorable comments which this well-known text-book has met with on the appearance of previous editions may be repeated for the present one, which may be said to constitute one of the most complete manuals in the American literature on this branch of medicine. It represents the work of a man well informed as to the theoretical phases of the subject and skilled in their practical application, to which is added a manner of presentation that makes the work readable and interesting.

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## BRIEF OF CURRENT LITERATURE.

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### OBSTETRICS.

**Fibroid Tumors of the Vulva.**—In presenting a report of twelve cases from the Johns Hopkins Hospital and a digest of the literature, V. N. Leonard (*Johns Hopk. Hosp. Bull.*, 1917, xxviii, 373) says that fibroid tumors of the vulva are the commonest of the benign solid tumors of this region and grow to larger size than superficial fibroid tumors in any other part of the body. As a rule they grow rapidly and soon become pedunculated. Most of them show some



form of degenerative change. The subperitoneal fibromata, which take origin in the pelvic connective tissue and, growing along lines of least resistance, first appear at the vulva, are the largest tumors on record. The largest tumor ever described was one of this type and weighed 268 pounds. Excluding the subperitoneal group, it may be said that, roughly, two-thirds of the fibroids of the vulva originate in the subcutaneous connective tissue and one-third in the extraperitoneal portion of the round ligament, while nearly one-fifth of them become sarcomatous. The vascular changes accompanying menstruation and pregnancy are shared by these tumors and exert a marked influence upon them, as is clearly shown by their swelling and sensitiveness under these circumstances. Herein lies the explanation of the fact that, almost without exception, they occur in the child-bearing period, that they grow rapidly, that they usually show degenerative changes and, finally, that a remarkably large percentage of them become sarcomatous.

**Improved Cesarean Section.**—The technic described by A. L. Smith (*Practitioner*, 1917, xcix, 541) is characterized chiefly by rapidity and simplicity. After a 1-inch incision just below the umbilicus, and without stopping to ligate divided vessels, this incision is continued upward to  $1\frac{1}{2}$  or 2 inches above the navel and downward, with scissors. The abdominal fascia and peritoneum are pinched up and similarly divided. A nick is made with scissors in the median line of the anterior uterine wall and enlarged up and downward with the fingers. The hand is rapidly inserted, a foot seized and the entire ovum and placenta are withdrawn and passed to an assistant. The only hemostasis employed is gentle compression of the uterine and ovarian arteries by the gloved hands of an assistant. The uterine muscle is rapidly united with a continuous catgut suture which does not penetrate the mucosa or the peritoneum, the latter having been stripped back for a quarter of an inch before suturing. The peritoneum is then closed with fine chromicized catgut or fine Chinese silk. The parietal peritoneum is united with a running catgut suture, the muscular layer with larger catgut, and the skin usually with interrupted silk-worm-gut stitches.

**Technic of Cesarean Section.**—The technic described by J. C. Jefferson (*Practitioner*, 1917, xcix, 562) is more complicated and varies according to the probability of uterine infection. In clean cases the operative area is covered with two layers of sterile gauze, towels and sheets. After incising the abdomen and peritoneum, Turkish towel-lig is clamped to the edges of the incision so as to cover it and the bare abdominal skin. One cubic centimeter of pituitary extract is given hypodermatically. The uterus is incised; its contents are rapidly extracted. The uterus is lifted out of the wound and its cavity wiped out with dry gauze. The cervical canal is then dilated digitally from above. The rubber gloves are then changed. The uterine incision is closed with interrupted catgut sutures and the organ dropped back. The outer layer of sterile towels is removed. The peritoneal cavity is then swabbed out, the omentum drawn

down in front of the uterus and the abdomen closed. In cases in which previous attempts to deliver have been made and which may therefore be infected a vaginal douche is given just before the operation. The abdominal incision is made large enough to permit the uterus to be lifted out at once. The intestines are then packed off with gauze; the edges of the opening in the upper abdominal sheet are drawn tightly around the lower uterine segment and pinned to it. The pituitary extract is given and the uterus is incised and emptied. The membranes are swabbed out and the uterine cavity and incised wall are swabbed with iodine. The gloves are changed, the uterine incision is closed and the upper layer of towels removed. The gloves are again changed. The uterus having been dropped back, the abdominal cavity is swabbed out. The omentum is drawn down behind the uterus. The edges of the abdominal incision are swabbed with iodine and sutured.

**Tuberculosis of the Appendix.**—J. R. Scott (*Annals Surg.*, 1917, lxi, 648) states that tuberculous appendicitis occurs more frequently than is generally recognized. About 0.5 per cent. of all appendices removed surgically are tuberculous. There are three forms of the disease, miliary, ulcerative, and hyperplastic. The lesion may be primary or secondary to tuberculosis elsewhere in the body. The primary form is extremely rare. The diagnosis rests upon the demonstration of an afternoon temperature, progressive weight loss, evening sweats and pain and tenderness in the right lower quadrant. The prognosis is unfavorable except in the very rare primary forms of the disease. It is best in the hyperplastic form. The treatment is operative whenever possible. Active pulmonary lesions contraindicate operation. There is no medical treatment of the lesion in the appendix itself. Hygienic treatment is indicated in active pulmonary conditions associated with tuberculous appendicitis.

**Treatment of Leukorrhea with Lactic Acid Bacilli.**—The method employed by F. B. Block and T. H. Llewellyn (*Jour. A. M. A.*, 1917, lxi, 2025) is deposition of a tablet containing lactic acid bacilli, slightly moistened with sterile water, in the upper part of the vagina. In vulvovaginitis in children, when the gonococci have largely disappeared, the use of the lactic acid bacilli seems to be of some value in reducing the discharge and in lessening the vaginal irritation. In the nonspecific types of vaginitis in children, the results are more encouraging. Results are practically nil in cases in which there is a gross pelvic pathologic condition. In the treatment of gonorrheal endocervicitis, or when cervical erosion, laceration, or another evident pathologic condition is the cause of the leukorrhea. A large number of cases in which the leukorrheal discharge is the chief symptom, and in which no definite disease can be determined, classified under the heading of nonspecific catarrhal endocervicitis almost uniformly present an alkaline reaction in the vagina, and, in approximately 50 per cent. of the cases, will respond to the treatment. In senile or atrophic vaginitis, the writers have had their bad results.

**Germicidal Value of Common Gynecologic Douching Agents.**

—J. R. Stark's (*Jour. Lab. & Clin. Med.*, 1917, iii, 199) experiments were performed with bacterial suspensions in melted plain agar subsequently rolled on the sides of test-tubes while cooling, then incubated and subsequently irrigated with the germicidal solutions for fifteen minutes. After removal of these solutions by saline irrigation, cultures were made from the surface and depth of the agar. These showed that bichloride of mercury destroys *B. coli*, staphylococcus pyogenes aureus, and the spore-former, *B. subtilis* when employed in low dilutions (1:1000 and 1:4000).

Lysol,  $\frac{1}{2}$  per cent. is as effective a germicide as a 1:15,000 bichloride solution as determined by the same procedure.

Potassium permanganate, 1:1500 strength, when used in the same manner as lysol and bichloride, is wholly ineffective.

The solution used did not inhibit bacterial growth, but destroyed it wherever effective at all.

Washing or irrigating with normal saline will not remove all bacterial growth.

**Irritable Bladder in Women.**—J. W. Stark (*N. Y. State Jour. Med.*, 1917, xvii, 549) says that when a woman complains of bladder irritation with no pus in the urine, the chances are that she has a true involvement of the urinary tract, regardless of any pelvic condition, and this irritation is a urethritis. Urethritis is usually a secondary infection from vaginal discharges carried by means of the napkin. Light and small napkins separate the labia which should act as a protection for the external meatus. The napkins become contaminated with bacteria from the vagina, skin or hair, and are continually held in contact with the external meatus; the discharge associated with pelvic disease is thus carried to the urethra by means of the napkin. Displacement of the uterus and pressure ordinarily do not produce irritation of the bladder. While we may have a true neurosis of the bladder the term has been used out of all proportion by the medical profession in the diagnosis of irritable bladder in women.

**A Case of Dystocia Following High Abdominal Hysteropexy.**—

Lepage (*Annales de gynécologie et d'obstétrique*, 1917, xlii, 705) states that facts accumulate to show that high fixation of the uterus would not be practical in women who are likely to conceive again. The low fixation is the indication of necessity if a woman wishes to undergo further pregnancy. He cites a new case of dystocia following high ventrofixation. The woman aged thirty-one entered the clinic after loss of the waters during the preceding night. She was pregnant for the third time, twelve years after the first childbirth, which lasted three days but was spontaneous. There was a history of postgestational prolapse. In the following year she underwent an operation for appendicitis but knew of no intervention for prolapse. Five years after the first birth she went through a normal gestation, labor lasting but five hours. Upon her admission to the clinic for her third labor the child was seen to be in a transverse position although the fundus extended 37 cm. above the



symphysis. A scar in the abdomen seemed to be adherent to the uterine wall. It was evident that a high ventrofixation had been added to the appendectomy without the woman's knowledge.

The case evolved into a shoulder presentation and for the first three days there had been little progress in labor. Fetal heart sounds were good. The course of procedure was most difficult to select until weakening of the fetal heart sounds and the appearance of bronchitis in the mother led to laparotomy and as a result of the hopelessly adherent state of the uterus to hysterotomy and extraction of the fetus. The intervention ended in total hysterectomy, and the mother made a good recovery. The fetus required reanimation and was found to have various malformations affecting especially the digits. There was also asymmetry of the face and malformation of the tongue. The most puzzling feature in the history is the easy, normal second labor four years after the fixation. That after this experience the uterus could become so adherent and show such deformity during gravidity seems inexplicable. Studied after extirpation the organ seemed like any uterus at term.

**Painless Labor.**—Quintella (*Revista de gynecologia e d'obstetricia do Rio de Janeiro*, 1917, xii, 3) refers especially to the use of certain formulæ as devised and employed for obstetrical analgesia. The first to receive attention is tocanalgine, which was recommended in 1914 by Ribemont-Dessaignes and investigated by the Academy of Medicine, Paris, with adverse report. The substance was said to have been opium acted upon in some manner by beer yeast. During the same year Professor Canton of Buenos Aires employed an analgesic-oxytocic formula which contained muriate of morphine and hypophysis extract with alleged good results. He termed his formula partoanalgina. In 1915 Canton reported 71 cases of labor under this resource. Two children only were lost and both had been recognized as lifeless before the drug was administered. The influence exerted on labor agreed closely with this claimed for tocanalgine but in neither instance is any corroborative testimony cited. In Rio de Janeiro two obstetrical analgesic formulæ have been recommended by their sponsors, Magaelhaes for "Cucina" and Silva Araujo for "Materindolor." The author has had no experience with the first named but the latter has been tested by him in 13 cases of labor. "Materindolor" appears to be harmless for mother and child. It dissociates pain from uterine contractions. The drug is of known formula and is apparently identical with or very similar to partoanalgina which, as already stated, combines morphine with hypophysis extract. It seems very probable that the parturient woman and pelvis are more tolerant of morphine than has generally been believed and that the posology of the latter may be in need of revision.

#### GYNECOLOGY AND ABDOMINAL SURGERY.

**Two Cases of Rare Tumors of the Breast.**—Hartmann and Souligoux (*Annales de gynécologie et d'obstétrique*, 1917, xlii, 714) report a case each of osteochondroma and calcified fibroma of the breast.



The former, removed by Souligoux in 1907, was examined at the time histologically by the late Professor Cornil. It was a pure case without any admixture of adenomatous tissue and as such extremely rare in man. Said to be common in certain animals, notably the bitch, is adenosarcoma containing osteocartilaginous tissue. In women this type of tissue is occasionally encountered in adenosarcoma and carcinoma. The calcified fibroma of the breast was removed from a woman of thirty-nine years with bilateral tumors of that organ. The growth in the left mamma was of stony hardness and Hartmann extirpated the breast. The tumor proved to be an adenofibroma infiltrated with lime salts. A small nodule in the right breast, readily enucleated proved to be a typical adenofibroma.

**Ovarian Autografts and Homografts in the Inferior Border of the Omentum.**—Mauclaire (*Annales de gynécologie et d'obstétrique*, 1917, xlii, 720) refers to a report on the subject of ovarian grafts by F. Martin which brings the subject down to 1916. In 1913 a pupil of the authors, Tussau, covered the same subject in a Lyon thesis and in 1915 Natrass of Australia, made still another contribution. The author now adds some unpublished personal experience with omental grafts practised after bilateral oophorectomy. The number of autografts was 10; of homografts, 7. Of the former it is known that menstruation persisted in 8 while 2 patients disappeared without reporting. Of the 7 women with homografts 4 continued to menstruate, while in 1 menstruation is not mentioned but the breasts secreted milk freely. In a sixth case menstruation had not returned at the time of writing. The seventh case was one of a homograft in the broad ligament and the result was negative throughout.

**Rapid Treatment of Acute and Chronic Gonorrhea in Abdomen.**

—Bastaki (*Annales de gynécologie et d'obstétrique*, 1917, xlii, 733) states that for nearly five years he has used the following treatment, which he terms abortive, for acute gonorrhea. After bacteriological diagnosis, the patient seated in the chair, has her vagina irrigated with 1:1000 sublimate solution, with Cusco's speculum in place the cervix is exposed and carefully cleansed with tampons of cotton. Pure iodine tincture is now applied within the cervix and over the vaginal portion of the same. The Cusco speculum is now withdrawn and replaced by a narrow anal speculum. Through the latter is introduced a gynecologic forceps armed with a large cotton tampon impregnated with pure iodine tincture. The anal speculum is now in turn withdrawn and the entire vagina swabbed with the tampon, a procedure which is somewhat disagreeable. Finally the external genitals, especially the urinary meatus, are treated with iodine. A tampon of saponized coal tar, of the size of an ordinary saucer is now packed into the vagina. During the next three days the same large tampons are used along with sublimate douches and on the fourth day a second iodine treatment is given, presumably for the last time. On the tenth day bacteriological tests are made, the smears being obtained with the aid of the curet. In not a single case has he ever found a gonococcus in the smears, even after the eighth day.

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